The Builder.

VOL. XCIV.—No. 3404. MAY 2, 1908.

ILLUSTRATIONS.

Renaissance and Modern Churches of Paris: V.—St. Vincent de Paul.....From a Photograph.
New Law Courts, Hong Kong .....Sir Aston Webb, R.A., and Mr. E. Ingress Bell, F.R.I.B.A., Joint Architects.
1. Elevation.
2. Section and Plan.
St. Luke's Church and Parish Room, Wimbledon.....Mr. T. G. Jackson, R.A., Architect.

Illustrations in Text.

The Four Courts, Dublin ..... Page 501
Ditto. Plan ..... Page 502
Sculptured Panel in Stone—"The Labourers in the Vineyard": one of a series for Church Decoration. By Mrs. Bernard Jenkin (Miss Margaret M. Giles) ..... Page 505
Cottages at Swanage ..... Page 510
Church of St. Vincent de Paul. Plan ..... Page 512
Plan of Tomb No. 16, El Amarna ..... Page 513
Ditto. View ..... Page 514
Illustrations to Student's Column :—
Figs. 19 to 22..... Page 516
Figs. 23 and 24 ..... Page 517

CONTENTS.

	PAGE
Architectural Composition	499
James Gandon (*concluded*)	500
Notes	503
Orrel Council School, Bootle	504
Panel: "The Labourers in the Vineyard"	505
Thoughts from a Retrospect	505
Letter from Paris	507
The New Gallery	508
Stained Glass	508
Notes from Scotland	509
Cottages at Swanage	510
The Cost of Clearing Streets of Snow	510
Minor Picture Exhibitions	511
Architectural Societies	511
Engineering Societies	511
Fifty Years Ago	511
Illustrations :—	
Renaissance and Modern Churches of Paris	511
New Law Courts, Hong-Kong	512
St. Luke's Church, Wimbledon	512
Competitions	513
Proposed New Buildings in London and Suburbs	513
Books—N. de G. Davies's "The Rock-tombs of El Amarna: Part V.—Smaller Tombs and Boundary Stelæ"; W. Stevenson's "The Trees of Commerce"; "Workmen's Compensation Cases," Vol. IX.; C. W. Tagg and L. O. Glenister's "London Laws and By-laws"; H. J. Spooner's "Machine Design, Construction, and Drawing"; "Decoration of Metal, Wood, Glass, etc."	513
Books Received	515
Trade Catalogues	515
Correspondence :—	
Builder's Liability in Working for a Tenant	515
Metropolitan Asylums Board	515
Ferro-Concrete Buildings and Loans	515
The Student's Column	516
General Building News	517
Stained Glass and Decoration	518
Appointment	518
Sanitary and Engineering News	518
Foreign	518
Miscellaneous	519
List of Competitions, Contracts, etc.	520
Capital and Labour	522
Patents	522
Some Recent Sales	523
Meetings	523
Prices Current	523
Tenders	524

Architectural Composition.

WRITER who attempts to do anything so serious as to try to reduce architectural composition to something like a science, and to show rules whereby one method of composition may be judged to be good and another to be bad, no doubt deserves to be considered seriously, whatever innate scepticism we may feel in regard to the probable value of such speculations in the æsthetics of architecture. We have therefore read through carefully Mr. J. Beverley Robinson's treatise on "Architectural Composition,"* which comes to us from the other side of the Atlantic. But we fear we are confirmed in our scepticism as to the possibility—even the advisability—of reducing architectural composition to a science with rules and regulations, though many of the author's suggestions are useful as suggestions and as leading to a fuller consideration of the subject.

We are brought up with a decided refusal to follow the author at one of his very first fences, at the foot of the first page of the first chapter, on "The Standard of Taste." The author remarks that

> "there is an underlying accuracy in the unsophisticated æsthetic sense that cannot be ignored. The buildings that have been admired through the ages by everybody appeal not less vividly to the untaught than to the cultivated taste."

With that position we feel a good deal of sympathy, and in the main it is true, of all the arts. Things which are admired only by an æsthetically cultured section of people, who rather please themselves with admiring what the common people do not understand, may have special beauties of their own, but they seldom maintain, in the long run, the claim to the highest position. What appeals to the best taste of the masses generally turns out in the end to be the higher thing; though it is perhaps less true of architecture than of some other arts, because architecture requires some degree of technical knowledge to understand the relation between cause and effect in a design. But then the author goes on :—

> "What veriest Philistine failed to admire the great Campanile at Venice, now so recently vanished from the earth; yet what tower was more praised by the connoisseur? Certainly where Philistine and connoisseur agree we are entitled to place our confidence."

Are we, we wonder, the Philistine or the connoisseur? Unfortunately for the argument, we think, and have roundly expressed the opinion, that the fallen Campanile was an ugly tower, wanting in the qualities of unity and inter-relation of parts, and we have found people (connoisseurs) who agree with us; and we suspect that the admiration of the Philistine for that tower is merely (whether he knows it or not) owing to its great height and the perpendicular lines of the stalk which emphasise the height. But we can hardly feel surprise at the author's taking this as an instance, when we find him in another chapter giving, as an example of "unity given by a single dominating tower," a photograph of the Jefferson Market Court House, of which the tower is one of the most hideous and ill-proportioned things that we have ever seen an illustration of. As the object of all such speculations as this book contains must be, in some way, to increase the perception of beauty and fitness in architecture, we are led at once to question what can be the value of any æsthetic speculations which leave their author dead to the fact of the hideousness of that tower, which he brings in as an illustration without a hint of dissatisfaction with its design.

These, however, are details; but the fact is that the author's main thesis is founded on a mistaken analogy. He has got hold of that old stumbling-block of the analogy between music and architecture, over which many a writer on architecture, with an imperfect knowledge about music, has foundered. He suggests that "as the eye and ear are the only two senses to which measured æsthetic pleasure is possible, the one in feet and inches, the other in bars and beats, it may be that the rules which apply to the one may eventually be found to be based on the same psychological facts as those which apply to the other." The same psychological facts, possibly; but not the same physical ones. The only analogy between musical composition and architectural composition is in regard to rhythm and length and proportion of parts in the composition—length

* "Architectural Composition: an attempt to order and phrase ideas which hitherto have been only felt by the Instinctive Taste of Designers." By J. Beverley Robinson, member of the American Institute of Architects. London: B. T. Batsford. New York: D. Van Nostrand Company. 1908.

in time or length in space, to the ear or the eye; and there are *no* "rules" in music as to those. A musical composer uses his rhythm and his proportions in a composition just as he pleases, as an architect uses his proportions just as he pleases; there are some conventional forms that are generally followed, but they are not obligatory, and in regard to such matters there is no scientific rule in the case of music, any more than, in our opinion, there can be any such rule in the case of architecture. The only part of music based on exact science is that which concerns concords and discords, which are based on mathematically demonstrable numbers of vibrations in sounds; but that has nothing to do with composition in the æsthetic sense of the word; nor has it, as far as we can see, any analogy in architecture.

Putting aside, however, as a fallacy, the idea of reducing architectural composition to a science, there is a great deal in Mr. Robinson's book which is useful and suggestive in regard to the massing of architectural compositions, and the reasons why one combination should be agreeable and another disagreeable. He reduces a good many of his examples to very simple diagrams, showing that a design may be resolved into a principal mass and two appendages, or two principal masses and a "link," a combination which, as he says, has been a favourite one in all ages and styles of architecture. In the case of three principal masses he is disposed to think that it is difficult to find examples where three apparently equal ones (with links between them) have been used without some modification of one of the masses; "wherever three masses are used there is a strong tendency to break up the group of three into a strong central mass and a subordinate group of two," or to mark the middle one of the three by some difference of treatment. The case of Peterborough Cathedral, with its narrower arch in the middle of the three, might have been cited (though we do not believe there was any such reason for the treatment in that case). But it certainly seems to be established, in a large number of cases, that where there are two equal principal masses they must be treated alike; where there are three there is a monotony in treating them alike, and a tendency to emphasise or to differentiate the centre one; and there is an obvious practical value in this treatment.

The author remarks that if we go a step further, and enquire concerning the possibility of a group of four masses, we find that there exist almost none; "it seems that beyond three, the mind fails to grasp a group of objects as a unit, and receives in place of unity an impression of vague plurality"; this we think is true. His two diagrams of methods of giving unity to four masses really amount, as he would no doubt agree, to arranging the masses in two couples or in one couple, so as to make it either a balance of two masses with a link, or a central mass with two subsidiary ones.

We quite agree with him also that, as a general rule, two masses of the same importance, with a link between, require symmetrical treatment; though there are exceptions arising out of the purpose of the building. He cites the Houses of Parliament as a group with two masses, but does not comment on the unequal design of the towers, which here is justified by their different uses; a point which Fergusson failed to see, in his criticism to the effect that the two towers ought to have been symmetrical. The effect would have been grander, no doubt, in a sense, but the characteristic treatment arising out of motive would have been lost. He gives a sketch (Fig. 42), probably an imaginary one, of two round towers of the same diameter at the opposite ends of a façade, to show the bad effect of treating them differently and of different heights. On the face of it the effect is bad, but if it were known that the two towers were for two different practical objects—one a bell tower, for instance, and the other not—the difference would be justified by the facts. On the other hand, his instance of a house (Fig. 41) with a mansard roof on one angle pavilion and a gable to the other, is quite in point as an example of bad treatment; yet how many such combinations we see, supposed to be "picturesque"—a most misleading word, often, in connexion with architectural design.

The criticism of an apartment house in New York, with two lofty blocks connected at the base, but with "the connecting link out of sight above," leaving the two blocks with a deep space between them, is rather questionable. Remember the grand effect of the two massive towers of Borthwick Castle, standing side by side. There are very few dogmas of this kind to which happy exceptions may not be found.

The chapter on the vexed and difficult question of "proportion" contains some good ideas. The suggestion that where high and comparatively narrow masses are joined by lower and comparatively long ones, the proportion of each, as rectangular spaces, should be similar—*i.e.* if the higher masses are as 5 of height to 3 of width, the lower masses should be as 5 of length to 3 of height, has something in it, and may be found a useful suggestion for ensuring a proportional harmony in a façade. There is a good deal more in this chapter that is worth attention, especially as the author does not push the idea of numerical proportions to any excess.

Taking it altogether, the author has produced a book which may be said to fulfil what he describes as one of his main objects—"to excite thought"; and it is throughout interesting to read. But we cannot make architectural composition into anything approaching to an exact science.

SIR F. WIGAN MEMORIAL, SOUTHWARK CATHEDRAL.—Two canons' stalls have been erected in this cathedral in memory of the late Sir F. Wigan. The stalls are of oak, and were constructed by Messrs. Thompson, of Peterborough. A bust, sculptured by Mr. A. G. Walker, of Chelsea, of the deceased baronet has also been placed in the south transept, near the chancel.

LONDON BLOCK DWELLERS.—Statistics compiled by the London County Council show that there are in London 672,030 tenements of less than five rooms. Of the lodgers in private houses, 22·2 per cent. had one-roomed tenements, 30·0 two-roomed tenements, 27·0 three-roomed tenements, and 20·8 four-roomed tenements. Of the block dwellers, the proportions were 10·6 per cent., 43·9, 38·6 and 6·9 respectively. The rents in the blocks vary considerably, but the average per room is 3s.

JAMES GANDON *(concluded)*.

WHILE the Custom House was proceeding, Gandon was forced against his own inclination to undertake a new Court House for the City of Waterford, and during its progress experienced a considerable amount of annoyance from his joint clients, the Grand Jury and the local Corporation, neither of which bodies appeared to have any idea as to the functions of an architect, and were so ignorant that they expected him to be responsible for the payment of the workmen. The following curious testimonial shows the Irish conception of an architect in those days. This document, signed by eight of the local gentry, runs as follows:—

"We have known Benjamin Shorter, of Bandon, architect, for the last ten years, during which period he has worked for us at different times, and in every manner executed his work in a very proper and masterly manner. We recommend him, therefore, to the public as an honest, industrious, sober, able workman, and think him very capable of executing any work he undertakes."

The next public work which Gandon undertook was a series of alterations in the Houses of Parliament, which proved to be of an exceedingly difficult and intricate nature. The ground fell very rapidly to the east side of the building, where a portico was to be erected to serve as an entrance to the House of Lords. This Gandon did, connecting it with the north front by a curved screen wall with niches in it, which carried on the lines of the entablature from the one to the other. The order of the north front was Ionic, but Gandon used Corinthian columns in the east portico, as the fall of the ground would otherwise have compelled the use of pedestals, or else a flight of steps that would have interfered with the foot way in the street. In the wall he used neither pilasters nor attached columns, so as to avoid any possible conflict of the orders, and to concentrate the richness of the building in the two fronts. Other additions were carried out on the west side of the building, but here he suffered from much interference, and it is doubtful if the work was really carried out from his designs at all. The screen wall on this side was set further back, and an open colonnade was placed in front of it.

When one reflects that the Bank of Ireland, as the building has now become, is the work of at least four architects, it seems almost a miracle that it should present such a homogeneous and dignified appearance; and that such is the case is a standing testimony to the sound building traditions of the XVIIIth century. The credit of the alterations that were made when the Bank took possession of the building is due to Francis Johnston, who pulled down the western screen wall, rebuilt it so as to incorporate the colonnade in front, and then added three-quarter columns to Gandon's wall in order to make the sides balance. These attached columns are perhaps a doubtful adornment to the building, but it would have been impossible for him to have omitted them in the eastern screen, without abolishing the existing columns in the western, a proceeding which it is safe to assume his clients would not have allowed.

The Four Courts, Dublin.

On the death of Thomas Cooley, who had begun the erection of extensive law offices on the north side of the Liffey in 1776, the commission for completing this work was given to James Gandon. Cooley's scheme, the western part of which was finished, had included a large quadrangle, some 330 ft. in length by 112 ft. in depth, but this had to be abandoned by his successor, owing to difficulty in obtaining ground at the back for the new Law Courts, which had now to be re-designed and built out across the middle of the quadrangle.

Gandon's plan is a clever one, and is well described in the following extracts from Malton's "Views":—

"The whole edifice of the Law Courts and the Law Offices together form an oblong rectangle of 440 feet in front, to the river, and 170 feet deep to the rear. The centre pile, 140 feet square, divides off the Law Offices, and forms two court yards, one to the East, and the other to the West, which courts are shut out from the street by handsome screen walls, perforated by arches, as shown in the View. The middle structure contains the Four Courts of Judicature, of the Chancery, King's Bench, Exchequer, and Common Pleas, with all requisite conveniences for the proper discharge of the various business transacted. . . .

From the street, is an ascent of five steps to the portico, with the great door of entrance in the centre of a semi-circular recess, conducting through an oblong vestibule into the great hall under the dome, into which is a descent of five steps. To have a clear conception of the disposition of the various apartments of the inside, as they are arranged around the circular hall, 'tis necessary first to conceive the plan well; which may be distinctly delineated in the imagination, by figuring a circle of 64 feet diameter inscribed on the centre of a square of 140 feet, with the four courts radiating from the circle to the angles of the square, like the four sails of a windmill. In the spaces between the courts are disposed convenient and handsome rooms for the judges, jurors, and proper officers.

In the circular hall are eight similar openings. One from the portico at entrance, the opposite to which leads to a spacious apartment called the Chancery Chamber, under which is an extensive Coffee-room, with other conveniences; the openings at right angles with the two just mentioned, communicate to the rooms for the judges and jurors, and the four others open to the respective courts, as already observed. In each of the above openings, stand four columns, two in depth on each side. In the piers, between the openings, are niches and sunk panels. The columns around the hall are of the Corinthian Order, 25 feet high, fluted the upper two thirds of the shaft, and stand upon a sub-plinth that contains the steps of ascent into the courts and avenues. The entablature is continued around unbroken, above which is an attic pedestal, having in the dado eight sunk panels corresponding and over the eight openings below, between the columns. In the panels, over the entrances into the courts, are historical pieces in bas-relief, representing four great events in British history—First, William the Conqueror establishing Courts of Justice, Feudal and Norman laws; second, King John signing Magna Charta; third, Henry the Second, granting the first charter to Dublin; fourth, James I. abolishing the Brehon Laws, and publishes the Act of Oblivion. The whole, with the sculpture on the external of the building are . . . admirably represented by . . . Mr. Edward Smyth, a native artist. From the attic springs a dome nearly hemispherical, having a large circular opening in the centre, around which is a gallery. . . . The hall is lighted by eight windows in the dome, over the eight panels of the attic; the large apertures in the cylinder without communicate to the windows within, whence flows a power of light, which completely as well as beautifully illumines the whole."

The exterior effect of the dome is clumsy and uninteresting; indeed it is difficult to imagine how Gandon, after the graceful dome at the Custom House, could have designed another so deficient in refinement; but the cause probably lies in the fact that by the time the dome was reached he had lost all interest in the work, for there is a long record of annoyance and interference, which the petty jealousies of officials caused him to suffer during its whole progress.

The troubles began on the very day the foundation stone was laid, on March 3, 1786, and are best described as far as possible in the unfortunate architect's own words:—

"After His Excellency the Duke of Rutland had retired from laying the first stone for the Four Courts, a gentleman of considerable fortune and influence, a privy counsellor, and a member of the Irish Parliament, from whom, on my first arrival in Ireland, I had experienced considerable attention and hospitality, and with whom I had no previous difference of opinion upon any occasion, stopped his travelling carriage to enquire the cause of the enclosures being made on the quay, as also the assemblage of so many persons. Being informed that the ceremony of laying the first stone of the New Courts of Law was the cause, this gentleman left his carriage, and addressed me in a manner not very courteous. "What is all this going on here? Who ordered the quay to be enclosed?" etc., etc. I informed him of the reason for enclosing the ground, and stated that as the architect, I was in no way responsible for the situation of any public building, but merely acting as a professional man, employed by the Government, had been requested to make designs for the new Courts of Law, adjoining the Law Offices, which had been previously erected. I stated I had submitted my designs to the Lord Lieutenant, who, with the Lord Chancellor and Chief Judges, had, on consideration, approved of the design, and had given directions for the building to commence, and that His Grace the Duke of Rutland had

further sanctioned it by the honour of his presence at the laying of the first stone."

The gentleman in question, however, was not satisfied, and declared that, if the building proceeded, it should be pulled down. Gandon did all he could to appease his wrath; he even set back the portico, to the detriment of the building; but, as the individual had not been consulted in the initial stages of the scheme, his dignity was hurt, and he condemned the plans in every particular.

The building did not proceed rapidly, as the Government would not allow a sufficient sum to be expended upon it annually, and on the death of the Duke of Rutland, in 1787, a determined effort was made to put a stop to the works. With this object in view Gandon was called to attend at the bar of the House of Commons with the designs and estimates of the Law Courts. Of this event he says:—

"Having been apprised that it was intended to revive the old objections to the situation, together with the supposed smallness and confined dimensions of the new Courts, I made a parallel between the dimensions of each of the old Courts with the new ones, together with the hall, in order to shew by how many feet square the old courts were exceeded; these facts were distinctly ascertained and written on cards, which I gave to the Lord Chancellor, the Chief Judges, and some of the Members of both Houses, in order that they might confute the representations raised by clamour, and shew the business in a just light. This measure produced the desired effect with all who were unprejudiced, and defeated the malignity of the parties."

The objections, nevertheless, continued; he was summoned to a meeting, and questioned as to the feasibility and cost of taking down the Courts, which were then half built, and re-erecting them further back. Such a course was obviously inadvisable, but to prove this to his interrogators was no easy matter, who, when all other arguments had failed, still alleged as a solid reason for pulling down the building, that, as the military were in the habit of passing along the quay daily, the noise of the fifes and drums would disturb the Courts. Yet even this difficulty Gandon did not find insurmountable; he suggested that they should be directed in future to use the quay on the other side of the river.

All these difficulties with his clients naturally had their counterpart in his relations with the contractors. Whenever "the stopping of them (the works) became a subject of conversation, impediments to their future progress immediately took place; every artificer was apprehensive that the materials prepared or ordered would be thrown on his hands, and that his bills might remain long unpaid. This directly gave a check to every exertion on their part by withdrawing their men, and counter-ordering the materials which came from a distance; so that when the business was to recommence the season was nearly lost by the delays, which circumstance occasioned considerable injury to the works. Indeed the frequent opposition given to this work had so harrassed and disgusted me, that I did not like to go near it, and it prevented me from constructing the inner dome with brick, which, for the sake of expedition, and to save expense, was done with carpentry."

In 1794, when the works were far advanced, another attempt was made to stop them; but on this occasion Gandon averted the catastrophe by a timely report on the unsatisfactory state of the building, sent to all who were concerned in its completion, and worded as follows:—

"To the Right Hon. the Lord Chancellor and Chief Judges.

A Report of the State of the Works of the New Courts of Law. By James Gandon, Architect, January, 1794.

Expended on the Courts—44,234*l.*

Wanted to complete the same—15,898*l.*

Your Architect begs leave to observe that a considerable balance is due to the artificers for works done, works nearly done, and materials purchased, which, by being exposed, will be liable to great injuries and depredation. The scaffolding, which is a very expensive article, will be rendered useless by standing so many years in the weather, and many of the ropes will be stolen.

The principal timbers composing the roof of the external dome are framed, and prepared to be fixed in their places, as soon as the columns are ready, which will be in April next; the remainder of the works for the inside are in great forwardness, and may receive much damage, particularly the Portland Capitals of the internal arches and dome. In fact, the materials, if left in their present state, are so liable to depredation and injury from exposure, that it is impossible to say what may be the future expense to reinstate them. About the sum of 6,000*l.* for the current year will put the building in a proper state of security by having the whole covered in: but it might be completed in one year and a half if the whole sum was granted, as required by the estimate, which is 15,898*l.*"

This representation had a much better result than was expected, namely, a grant from the Government for 16,000*l.*, by means of which it became possible to open the Courts for use in November, 1796, ten years and eight months after the laying of the foundation-stone; but the whole building was not finally completed until 1802, twenty-six years after it had been begun by Thomas Cooley.

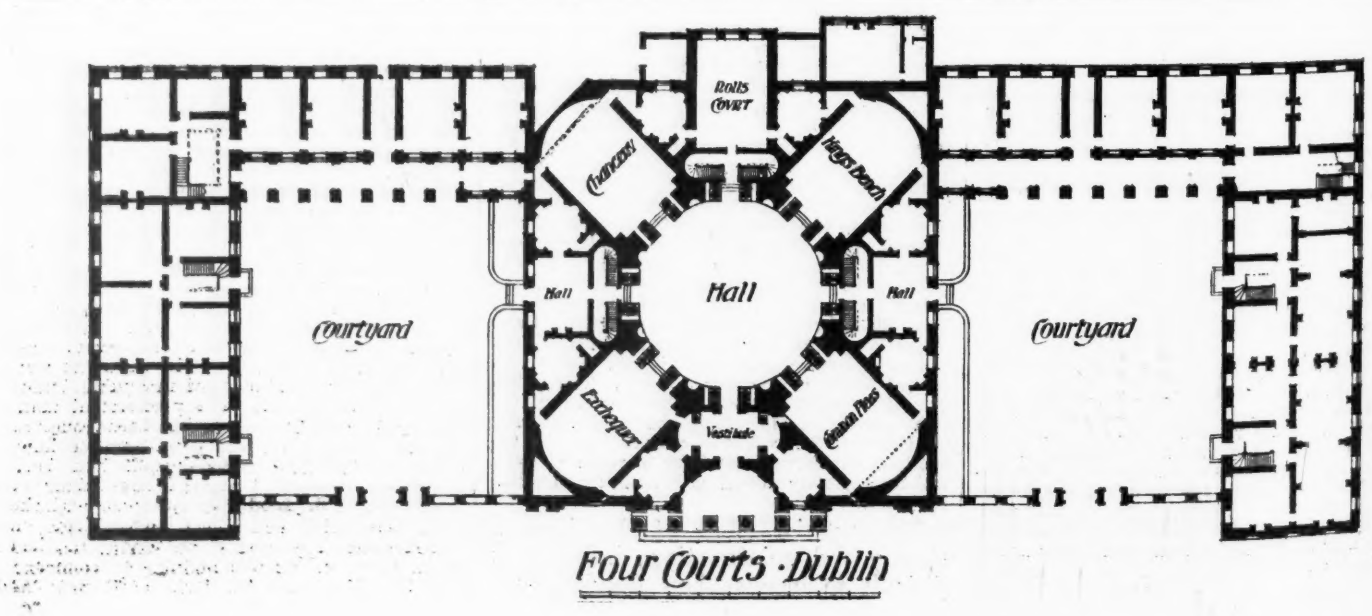
There are three more public buildings in Dublin of which Gandon was the architect—the Military Hospital in Phœnix Park, the Carlisle Bridge, and the King's Inns. The first of these was purely a charitable institution, and Gandon therefore made a present of his design to its promoters, but was unable to superintend the erection of the work, which was carried out much in accordance with his original ideas.

A few years after, in 1791, the foundation-stone of the Carlisle Bridge was laid, but the design as carried out differs materially from the original one, for Gandon wanted to make this a triumphal bridge, with a colonnade along the top, but the cost was considered to be too great, and the idea had to be given up.

The King's Inns was the last public building which he undertook. The design is interesting and refined, but the complete scheme was never carried out, and the building to-day presents a very neglected appearance. The foundation-stone was laid in 1785, but the work progressed very slowly, partly because the lawyers had purchased a site with a defective title, partly because of lack of funds, and partly because of political troubles. The numerous delays were a source of much annoyance to all parties, especially to the architect, who was now becoming an old man and in delicate health. He struggled on with the work for twelve years, and finally, after receiving a letter from the Lord Chancellor unjustly taxing him with the responsibility for all that had gone amiss, he resigned his position, making a dignified protest, and recommending as his successor his pupil, Mr. H. A. Baker.

Gandon now gave up practice entirely and retired to Lucan, which at that time was a sort of spa, a few miles from Dublin. Here he spent the remainder of his days, devoting much of his time to planting; but grand architectural schemes were still his great delight, and he frequently occupied himself in their projection. Of these his principal sketches were suggestions for two memorials in commemoration of the French wars, one for a triumphal entrance to Phœnix Park, and the other for a colonnaded bridge at Westminster.

But in these later years he suffered much from gout; he had been subject to it all his life, and it now gradually took possession of his whole system,



Four Courts · Dublin

until it finally became the cause of his death in 1823. In the latter part of his life he had been the recipient of many honours; he had been elected an original member of the Royal Irish Academy in 1786, an original Honorary member of the Architects' Club in 1791, together with Carr of York, Revett, and Thomas Sandby, and a member of the Royal Society of Antiquaries in 1797. He had declined membership of the Royal Hibernian Academy on account of his advanced age at the time of its foundation, and it is said that it was the intention of King George the Fourth to confer knighthood upon him had he not been confined to his house at the time of the royal visit by a bad attack of the gout.

He was buried in Dublin next to his old friend Captain Grose, the famous antiquary. They had been companions together in their earlier years, and the intimacy was renewed when Grose visited Ireland to collect materials for a work on Irish antiquities; but, on a second visit for the same purpose, he unfortunately died quite suddenly, while he was stopping at the house of his friend.

The position which Gandon holds in relation to architecture and the arts generally is an important one. He was a man of strong individuality, a fact which communicated itself to his work, and through it he must have exerted a very wholesome influence on the architects of his time in Ireland. But his influence was not confined to architecture alone; it must have made its force felt indirectly in the cause of good taste in all the arts, for both in London and in Dublin his figure was always a prominent as well as a popular one in the society of painters, sculptors, and all the literary and artistic dilettanti of the day.

That he should never have travelled is perhaps remarkable. As a winner of the Royal Academy Gold Medal, he was offered the King's Pension to enable him to do so, but this opportunity did not come until he was in the midst of the worries of his busy Dublin practice, and so he was compelled to decline it and remain at home. Yet, except for his own sake, it is hardly a matter for regret that his whole knowledge of architecture was gained at Shipley's Academy and in the office of Sir William Chambers. Undoubtedly his training was a narrow one, and, as the experimental stage of the Renaissance was long since past, the field before him was strictly limited; nevertheless, he did not try to break fresh ground, but kept within his boundaries and did what there yet remained to be done in no uncertain manner. He, and the younger Dance, were the last great architects who stuck to the established traditions of the XVIIIth century. Robert Adam and "Athenian" Stuart, the first of the innovators, were both of them senior to those two, and their influence was as immediate as it was considerable, but it in no way affected the architecture of Newgate Prison or of the Dublin Custom House. The latter building is indeed a worthy conclusion to the golden age of English architecture, and as much helps to justify the term as does the building that inaugurated that epoch, the Banqueting Hall at Whitehall. In both is Inigo Jones' dictum closely followed and amply proved, that architecture should be "solid, proportioned according to the rules, masculine, and unaffected." It is, moreover, to Gandon's everlasting credit that the great period intervening between the two buildings should have passed away full of grace, dignity, and honour, and without the least taint of rococo-ism or decay.

Hope, resting upon her anchor, on the dome of the Custom House, watched the passing of the spirit of pure classic architecture in the City of Dublin, in the last days of the XVIIIth century; she has lived through the storms and transitions of the XIXth, and now, in the XXth century awaits the coming of a new golden age when, with a vastly extended knowledge of all the arts and sciences, architecture shall once more move forward "solid, proportioned unto the rules, masculine, and unaffected."

NOTES.

Recent Developments in Pneumatic Foundations. In a paper read before the American Society of Civil Engineers, Mr. D. A. Usina reviews briefly the recent and interesting developments made in pneumatic foundations as employed for high buildings in the lower part of New York. In that district the surface ground lies on a stratum of rock, the depth of which ranges from 40 ft. to 100 ft., and to which enormous loads are transferred by concrete piers built with pneumatic caissons. Before recent improvements pneumatic foundations were formed by the aid of a cofferdam and caisson, with sides and roof of heavy timber, or of sheet steel with internal bracing. These structures, together with the shaft communicating with the working chamber, were usually left in the ground, and their liability to decay constituted an element of possible danger. As the author points out, recent activity in high building construction in New York has witnessed the elimination of every material but concrete. The sinking of a cofferdam and the use of a metal or timber roof for the working chamber have been rendered unnecessary, and the steel shaft has been designed so as to permit its removal after having served its purpose in the sinking of the caisson. In the latest practice the concrete piers are reinforced by steel rods, or replaced by steel columns embedded in concrete as a protection against corrosive influences. The paper is accompanied by drawings tracing the evolution of modern caisson foundations for buildings and may be read with advantage by all who have occasion to provide foundations of maximum bearing power under conditions analogous to those prevailing in New York.

Column Tests. One of the most prominent lessons of the Quebec Bridge failure is the necessity for practical tests of full-size steel columns and struts. The subject has naturally attracted considerable attention in the United States, and as a result of the paper read by Mr. J. R. Worcester on "Safe Stresses in Steel Columns" a resolution has been passed by the American Society of Civil Engineers recommending the appointment of a special committee to investigate the design and resistance of such members. A systematic inquiry of the kind would place at the disposal of engineers and architects valuable data, and it is to be hoped that the proposal may be adopted. At the same time, however, we scarcely think that British engineers should be content to obtain information from the work of their *confrères* in other lands. The Institution of Civil Engineers ought to be directly interested in the practical strength of members upon which the stability of bridges and other important structures so largely depends, and it would be very appropriate if they were to undertake an investigation similar to that under consideration by the American Society.

Surface-Contact Tramways in London. While various important installations of the surface-contact system have been in operation for years past on the Continent and in America, the same method of furnishing current for traction is chiefly represented in this country by the electric tramways at Wolverhampton and Lincoln. Before long, however, we shall have a still more prominent example in the Aldgate and Bow line of the London County Council, where, owing to the difficulty of applying the underground conduits of the type adopted eleswhere in the Metropolis, the surface-contact system was chosen as a preferable alternative to overhead cables. The latter are very objectionable in cities and towns, not only on account of the obstruction caused by the standards, but also because of the danger of shock and fire in case one of the cables should break, or in case a telephone or telegraph wire should break, and, by coming in contact with an overhead cable, serve as a conductor of high-tension current to the street below. The chief objection urged against the surface-contact system is the possibility that one of the studs may accidentally remain "live" after the car has passed, but in the system adopted by the County Council there is very little if any risk of the kind. This is a point concerning which we shall soon have the benefit of further practical experience.

The New Sea-Wall at Scarborough. An undertaking which has been under construction for eleven years has recently been completed at Scarborough. The works include a sea-wall with the total height of 40 ft. above foundation level, and in some parts 20 ft. above high-water level, extending for the length of 4,200 ft. between the north and south bays. This wall is 30 ft. wide at the bottom and 10 ft. wide at the top, and was built of concrete blocks weighing from 2 tons to 9 tons each. Behind the wall mass concrete is filled in to form the foundation of the new Marine Drive. Notwithstanding the solidity of the construction considerable damage has been caused by the sea on more than one occasion, and in consequence of two recent storms part of the sea-wall has moved in a forward direction. With the object of guarding against similar action in the future it is now proposed to sink

caissons along the front of the wall. The total cost has exceeded the original contract amount by more than 50 per cent., and the history of the project illustrates the difficulty of executing works of the kind in places exposed to the full force of the sea.

Painting Concrete.

IN a short paper on "The Influence of Sunlight on Paints and Varnishes," recently communicated by Mr. Maximilian Toch to the New York section of the Society of Chemical Industry, some interesting comments on bituminous paints were made. The author expressed the opinion that "the painting of concrete to preserve it against the action of moisture and frost is destined to become as large an industry as the painting of wood," but said that those who have used asphalt paints for concrete have found that disintegration of the asphalt occurs in a very short time. He regards the decomposition of the bitumen as the effect of exposure to the combined action of sunlight, air, and moisture, and states that free carbon is one of the products of decomposition. Linseed-oil paint is rapidly destroyed by concrete, owing to the action of the lime on the oil, but Mr. Toch does not regard the destruction of bitumen painted on concrete as due to any action of the concrete upon it. Although the author speaks so confidently with regard to the future use of paint for preserving concrete, his paper shows only that certain paints are unsuitable for use on concrete exposed to sunlight and air and rain. He leaves us in ignorance as to what paint is, in his opinion, the most suitable for use as a preservative on concrete.

Electric Time.

MANY systems for the electrical control of clocks have been devised, but most of them have proved failures in practice. The causes of failure are generally either the running down of the batteries used to produce the current, or the deterioration of the mechanical contacts in the circuit. In the "Magneta" system of electric clocks, which is installed in the new Town Hall at Lambeth, both these defects have been eliminated. The weight of the master clock actuates not only the master clock itself, but also all the others. At intervals of a minute this weight falls through a very small space turning a copper coil which rotates in a strong field due to permanent magnets. The alternating currents generated by this armature transmit an impulse to every clock in the circuit, moving the hands forward to the next minute. Sir William Preece states that 500 clocks can easily be controlled in this way through 50 miles of wire. The mechanism for propelling the hands of the clocks is extremely simple, and there should be no difficulty in maintaining it in working order. A great advantage of the system is that the secondary clocks require no winding or setting. Magneta clocks are now in use in many public buildings in London and Glasgow, and every one can easily ascertain whether they are giving satisfaction. We are favourably impressed with the simplicity and effectiveness of the electrical and mechanical arrangements.

Ventilation of Cardiff Municipal Buildings.

WE regret to see that there have been complaints as to the want of efficient ventilation in the Cardiff Municipal buildings, the Town Clerk having stated, in a letter to one of the official committees, that "not a day passes without one of the assistants complaining of headaches or some other ill-effects from breathing the heated, oppressive, and obnoxious air which is pumped into the rooms." The ventilation is, we understand, mechanical and on the plenum system, which in general we have considered to be the best system of ventilating a public building; and if these complaints are justified by the facts, it is of some public importance that the real cause for them should be ascertained. It may be that the air has been overheated or not sufficiently sprayed and cleansed before delivery into the rooms. Certainly we have had experience of large buildings ventilated on the plenum system, in which no complaints were or could be made as to want of freshness in the atmosphere. Perhaps the architects may have something to say on the subject, as no doubt the complaints have been communicated to them.

Manchester Royal Infirmary: New and Old.

AT a meeting convened by the Lord Mayor a few days ago it was announced that subscriptions to an amount of 24,500*l.* had been promised towards 100,000*l.* for the building fund. The new Infirmary buildings will cost 500,000*l.*, and will provide for 600 beds. The Corporation have agreed to pay 400,000*l.* for the site of the present Infirmary, which they will utilise for a new art gallery and library and for the improvement of the public thoroughfares. The old Infirmary was established in 1752 by Joseph Bancroft and Dr. Charles White; the buildings were erected in 1755 by subscription; a lunatic asylum and a dispensary were added in 1765–92. The cost of the new art gallery and library will be defrayed with the proceeds, 161,000*l.*, of the sale of the old reference library, formerly the Town Hall, which was built at a cost of 40,000*l.*, after Francis Goodwin's designs, based upon those of the Erectheion and the monument of Andronicus Cyrrhestes, formerly called the "Tower of the Winds," at Athens.

Welsh National War Memorial.

THE design by Mr. Albert Toft, the well-known sculptor, has been selected in a limited competition for a Welsh national war memorial, to be erected in Cathays Park, Cardiff, in proximity to the municipal buildings. Models were submitted by six sculptors invited to compete—Mr. Gilbert Bayes, Mr. H. C. Fehr, Mr. A. Bertram Pegram, Mr. Albert Toft, Mr. A. G. Walker, and Mr. F. Derwent Wood; a selection which showed excellent judgment on the part of the promoters of the competition, for any one of those sculptors might have been trusted to produce something good. Mr. Toft's model, as far as one can judge from a rough illustration published in a daily paper, promises to be a very satisfactory work both in a sculptural and an architectural sense. It consists of an upright pedestal, square on plan, with a panel on one face for an inscription, and with side brackets carrying seated figures relieved against the central pedestal. The whole is on a slightly elevated base with curved steps in front. The award was made by the Earl of Plymouth and Mr. Frampton, R.A. This seems to be an example of a highly successful art competition, where all the work was good and where the best has been selected.

The Royal Academy.

WE may note that the Royal Academy has this year altered its long-standing arrangements for the week preceding the public opening of the exhibition. The annual dinner, instead of taking place on Saturday evening, was announced for Thursday evening; the private view is changed from Friday to Saturday; and the Press View, in place of being, as heretofore, on Wednesday and part of Thursday, is on Friday. Hence, though we are publishing two subjects from the Architectural Room, which we know are exhibited, we are obliged to defer till next week our leading article on "Architecture at the Royal Academy," which has usually appeared in the issue preceding the public opening day.

ORREL COUNCIL SCHOOL, BOOTLE.

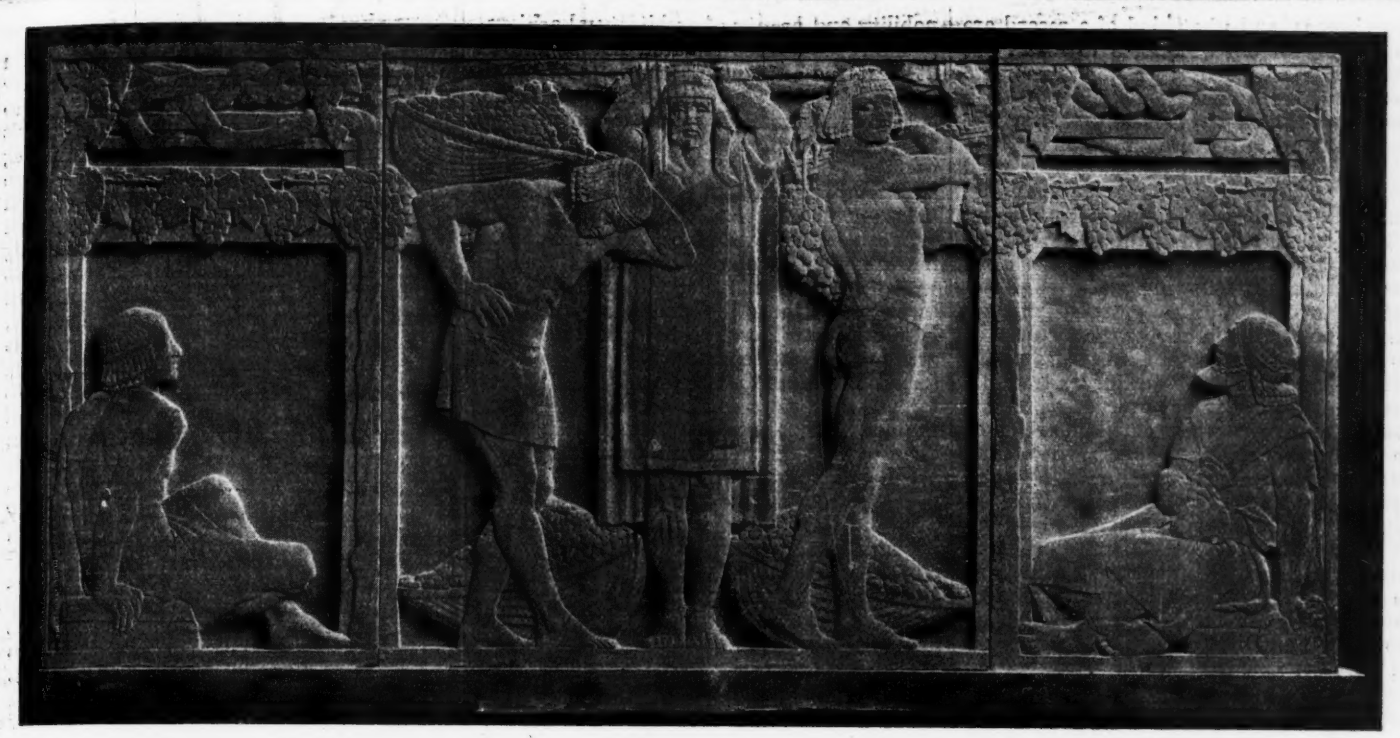
THE award for this competition, which was open to all England, has resulted in the first place being given to Messrs. Crouch, Butler, & Savage, of Birmingham. There were no premiums offered, and the Council adopted the unorthodox arrangement of calling in as advisor (*not* assessor) a professional architect to select the best eight sets, leaving the actual decision of the first place to themselves. It would seem, however, that in this case the result has been successful. We had no means of judging of the merits of the majority of the sets sent in (in all 147 sets), but of the eight sets of drawings which are on view at present, Messrs. Crouch, Butler, & Savage's scheme is the best.

The conditions, which went somewhat minutely into constructional and interior requirements [such as that the walls of all teaching rooms should have glazed-brick dados to the height of 4 ft., above that a continuous blackboard 3 ft. high, the remaining wall-face to be in plaster], in the main disposition of the buildings wisely left the competitors a free hand.

The school is to provide accommodation for 1,000 children and to be of ordinary type; *i.e.*, boys', girls', and infants'. The boys and girls were to be in one building, the boys on the upper floor and the infants in a one-story annexe. The class-rooms were to contain forty-eight as a rule, but each of the three sections should contain two classrooms for sixty. No central-hall was asked for, but the school was to be on the class-room system with commodious corridors; and ample cloak-rooms were specially asked for. The cookery and manual instruction centres were not necessarily to be in separate buildings.

There were two excellent clauses in the conditions with reference to external treatment without being too narrowly binding. The elevations were to be faced with hard-burnt grey bricks—quite the most beautiful building material in these parts, particularly if they are made wire-cut on face instead of on bed. Secondly, the building was desired to be free from numerous gables. The effect of this has been to raise the standard of design by making for a broader and simpler treatment.

The cost was to be 11*l.* a head (exclusive of the 5 per cent. margin by which the builder's estimate might exceed the architect's competition estimate), which was to include, beside the main buildings, all excavating,



Sculptured Panel in Stone—"The Labourers in the Vineyard": one of a series for Church Decoration. By Mrs. Bernard Jenkin (Miss Margaret M. Giles).

foundations, fences, interior fittings (not desks), and caretaker's cottage, together with quantities (1½ per cent.), architect's commission (5 per cent.), clerk of works' salary (234*l.*), legal charges (50*l.*), electric installation in all school premises (225*l.*).

The site is an irregular one and somewhat elongated, the longer axis running N.E. and S.W. It is rather difficult to describe, as the roads which surround it are not yet named. The obvious position for the buildings was along this axis, which gave one frontage facing S.E. and the other N.W. This was adopted in most cases, the general shape of the buildings being similar—*i.e.*, a long narrow building running the whole length of the site with its shorter ends actually on the boundary, one-half of the building being two-storied for boys and girls and the other one-storied for infants.

Messrs. Crouch, Butler, & Savage differed from many of the others by bringing their building nearer up to the N.W. boundary, and this we think desirable. The playgrounds in most of the schemes are divided by the main body of the school, giving one N.W. aspect and the other a S.E. By bringing the school up to the N.W. boundary both playgrounds have a S.E. aspect, and are sufficiently divided by the ranges of latrines and manual instruction building, with the cookery centre over at the far side of the site.

Another difference from the other designs is in the arrangement by which, on the ground floor, the girls' and infants' departments are separated by a way through into the playground, while the requirement that the female assistant teachers' room should serve both departments is met by placing it in a mezzanine over part of this gap between the two blocks.

The worst feature of this arrangement is the position of the girls' head-teacher's room, which is also placed in this mezzanine, leaving the girls' school rather unsupervised. The infants' teacher is well placed between the two infants' cloak-rooms. The mistresses have excellent supervision over the playground. It is questionable whether it is wise to duplicate the entrances and cloakrooms to each department, as is done in this scheme.

The boys' school, over the girls', follows the same plan, with four classrooms for fifty to the S.E., and two classrooms for sixty to the N.W., separated by a marching corridor 12 ft. wide. The headmaster's and assistant masters' rooms are placed in opposite corners over the boys' entrances, with good supervision over the playground; they are, however, off a mezzanine level. There is some little complication about the staircases, especially at the side, where the female teachers' stairs dovetail into the boys' stairs.

The proportion of scholars has been divided into 320 boys, 320 girls, and 370 infants, which allows for accommodation slightly in excess of what was asked for.

The elevations are the best of the eight selected, although there is something rather better in the proportion of the central block of No. 137, which seems to us to be the next scheme in order of merit.

The plans of the eight selected schemes were on view at the Bootle Town Hall until the end of April.

PANEL: "THE LABOURERS IN THE VINEYARD."

THIS panel was designed as the first of a series of illustrations of the Parables, which were to have been placed in a church, but the scheme had to be abandoned owing to want of funds.

It was executed direct in the stone, without previous modelling, in order to obtain a purely stone quality in the relief. This system of sinking a bas relief out of the flat surface of the stone, leaving the original face, in very low relief and with a good deal of untouched surface, for the higher planes, is somewhat analogous to the practice of Egyptian sculpture, and is rather a novelty in modern work. It has the effect of giving a peculiarly severe and architectural character to the work, very suitable for architectural decoration. We should be glad to hear that there were any chance of the series being completed for some church or other building where it can be afforded.

The sculptor is the lady who now bears the name of Mrs. Bernard Jenkin, but whose work has often been seen at the Royal Academy under the name of Miss Margaret M. Giles.

ST. CUTHBERT'S CHURCH, ORMESBY.—Under the direction of the architect, Mr. H. L. Hicks, a tower has been added to this church. Messrs. E. Cruddas & Son, of Guisborough, were the builders. The belfry contains a new peal of eight bells, which have been placed in position by Messrs. John Taylor & Co., of Loughborough. The total cost of the work has been about 3,000*l.*

THOUGHTS FROM A RETROSPECT.*

Past Architecture.

TO NO profession or calling is the past of so much value as to the architect. Manuscripts chronicle some of the facts and traditions of life from remote ages. The earlier MSS. are sometimes embellished with undecipherable symbolical hieroglyphics, but nothing reveals the everyday domestic and public life of a people so fully as do the material evidences left us in the shape of their architectural achievements. It is said, and with truth, the genius of a nation is stamped in the great monuments of culture and taste, and from a study of past architecture we learn not only of the conditions, but also of the hopes and very thoughts of the people of bygone times, almost more surely than from their written chronicles. The changing forms, either by creation or evolution, tell us unmistakably the progress of national thought—social and political. The great sphinx head at Gizeh, placed about 4,000 years B.C., tells the overawing mystery of silence which marks that period: the Egyptian temples scratched over with symbolic forms, for lack of a language, in words that should speak for all time; the palaces of the Assyrians and Persians marking their domestic conditions: the temples of the Greeks enshrining their heathen deities, and their monuments recording a nation's pastimes and luxurious lives; the Basilicas or Law Courts of the Romans, telling their love of justice: the religious houses of the Christian era, expressing the force of the new religion in spreading the story of the Redeemer: the cathedrals of the middle ages, telling the beliefs and the devotion of the faithful and the forward march of mediæval civilisation; in all these temples and homes the lesson of the life and habits of those who reared them is revealed in a manner beyond any written description.

Lessons of the Past.

What may be the special teaching in those material records of the ancients and of the middle ages for the architect? They tell of minds inspired by sublime ideals suffused with living earnestness of purpose, patient labour, and (perhaps the most important lesson of all) fidelity and truth in execution. How are we of the present day applying

* Concluding Presidential address delivered by Mr. Hippolyte J. Blanc to the members of the Edinburgh Architectural Association, on April 22.

D

these lessons, and what kind of a record are we leaving for our successors to read? Is it by slavishly imitating the inanimate forms of past monuments, oblivious to their living inspiration, mechanically tracing the forms and details without imbibing the spirit so manifest in them; or, are we getting tired of imaginary restraint of rules and principles, and are we striving to be free and to get back to the genesis of things by expressing the crudities of the peasant country dance, instead of following the tutored and trained movements of the graceful minuet? There is no slavery in having the faculties of the mind brought into harmonious sympathy with the true and the beautiful by training. It is not necessary in our everyday practice that all our new work should savour of the Archæological Encyclopædia. No more should it give evidence of its author having regardlessly run away from tradition in meteoric erration, leaving a doubt regarding the next line of development. The late eminent architect George Street said that the best man to trust with the solution of present-day architectural problems was he who knew most of the past. We therefore feel the later new freaks in architectural art have not much if anything to recommend them; their compositions disregard all principles. The façades splashed with "sports" of columned and entablatured fenestration, projected on miniature brackets quite incapable of supporting the mass unassisted, cannot be called other than eccentricities in conception. The imposition of such features upon a façade, like a heavy frame unattached on a wall, looks unsatisfactory even to the layman; and while this desire for novelty, we may unfortunately have to endure for a while more samples of it, the practice, not being based upon any principle, is likely, let us hope, to be evanescent.

Though the changes from Classic to Romanesque and the succession of Pointed, Decorated, and Perpendicular Gothic were marked, in each there is an obvious sequence. There is no trace of sudden leaps, but a marked and consistent transition in development upon pre-existing lines. The so-called new art is the offspring of a restless mind prematurely thrust out from the architectural schoolroom. The roots are shallow, and its leafage promises to be dwarfed and without blossom. The lesson from the more scholarly practice, as well as from the threatened deviation from it, would seem to be that we are better to develop along the lines of consistent continuity, each practitioner adding his quota of advanced thought and expression according to his training and acquirements, if we would strive with just ambition to be builders up of our nation's or our city's architectural reputation. We might in this way improve our moral architectural atmosphere and nurse a higher conception of civic duty with increased devotion to the public interests, and at the same time nurse a disposition to give assistance for the promotion of our Society's improvement.

Education in Art.

Architecture, we have observed, is material history from earliest times; it is the best recorder of the progress of events; it impresses the mind to those who can read it more than MS. But to make it a useful factor, a knowledge of it should be implanted early in life: in short, it should form a part of everyday school instruction to those of receptive age. For the present-day public much has been done, and through no more energetic agency than the Edinburgh Architectural Association, whose lectures, excursions, and Saturday afternoon visits, inaugurated forty years ago, have attracted and interested many among the lay community. These have grown to be appreciative and intelligent sympathisers with the works of the architect past and present, but we need to go further. Cannot something be done among children at school to enlist their sympathy in the nobility and beauty of architectural achievements? Can these children not be taught at least the elementary principles of architectural forms? An effort should be made, and in time there may grow up amongst us a generation of intelligent admirers and useful critics of what constitutes good taste and appropriateness in the architectural embellishments of a city. Let a portion of the year at present devoted to sports be set apart for the practice of other pastimes such as will furnish the mind for the greater enjoyment of business life and the periods of leisure in travel, and no better subject than architecture can be selected for this end. A knowledge of the elements of architectural forms will beget a fondness and a taste for the art. What is required is the education of all to the value of art as a national system. We hear it stated and reiterated over and over again that the public require to be educated, but from what standpoint must the beginning be. When architects in treating city sites frequently place upon them compositions somewhat inappropriate in character regardless of the effect on the surroundings, how can the public reconcile such with the truer work which they have been educated to admire. Edinburgh is unique as a city for symmetry in arrangement, for dignity and nobility of its public buildings. Its early modern architects proved themselves masters in their art. Why does later modernity flaunt some of the commercial architectural abandonments so regardlessly in our best sober thoroughfares? Each site in our city should be considered by architects not as an isolated spot, but as part of a picture composition, in which the new should be blended with the immediate surroundings. By this a city may be made more interesting, beautiful, and attractive.

Composition.

Composition is the first law in any picture scheme, and as an architect has special opportunities of dealing with masses, and on a large scale, he should show his regard for, and study carefully, the probable effect of his own contribution to the composition. In a former address several excellent schemes of composition were noted. There are situations where quaintness and artistic variety are appropriate, as in the varied crest-line and slope of the Old Town; there are also situations where the grandeur and stately nobility of a fine promenade should be regarded, as in Princes-street, George-street, and others. For the latter, thoughtful restraint should be exercised in dealing with new work. There is enough to educate as to what should be, in the architecture of Edinburgh. Let them be preserved and, as examples, studied for guidance. Then shall our young men learn and the future amenity of the city be assured.

Laying out a City.

Much has been said on the matter of the laying out a city. In several European capitals the matter has been discussed with resulting improvement, and at architectural congresses the subject has received a large measure of attention and support.

The present-day cry is for garden cities. This title seems in some cases a contradiction of terms, seeing that in planning a city a first consideration must be convenience for its commercial intercommunications. This facility of intercourse should not be hampered by a too frequent intrusion of so-called garden amenities, else no reasonable compactness would be possible. Time would be wasted by the increased distances resulting from a disproportionate spreading out of the chief commercial centres of a city. Main arterial thoroughfares should be reasonably straight and wide; side or branch streets proportionately less in width, and arranged so far as possible to relieve the main thoroughfares of much burdensome traffic. The "city beautiful" should be our aim and name.

Edinburgh.

Few cities afford better examples than does our own of the two modes of how a city ought to be laid out and how it ought not to be. The one—the New Town—is the result of a carefully considered scheme combining a number of contiguous properties in one group, and the dignity of effect produced cannot be disputed. There garden and open spaces are interspersed with building groups in a pleasing and non-inconvenient manner. In the other—the later suburban extensions—there is no prearranged scheme, each petty proprietor being allowed the exercise of his free will, the object with each seeming to have been to do the utmost possible to block out nature by stretches of the most unattractive stone fronts without interest or relief, without grass-blade or tree, with ranges of uninviting struggling pavement-fronted shops, displaying alternately cabbages and potatoes, etc., mixed with sugar stuffs in chaotic disorder, bottle-supported rock too weak to stand on its own legs, dairies whose windows are completely furnished with one stucco cow and a basket of six white polished eggs warranted perhaps "can't be beat," with the doors and shutters of the unlet third besmirched with bad spelling and unedifying diction. Miles of this in a main highway, tortuous, undulating, narrow, wholly inadequate for the traffic, and dirty. How can such erratic planning breed anything else but squalor and slum? The authorities of our city have little credit by this condition of things, by their remissness in allowing the growth of it. In a few years more another Chambers will claim an innings to repeat a new improvement scheme, with its consequent taxation to reclaim the degenerate condition of parts of the fairest city of our country. The lesson is before us. Let it be to the architects of to-day and the future to stand forward as a strong wall against patrons whose sole practice is desecration, whose sole aim is to put a few extra pence in their pockets—"to get riches, no matter how, only to get them." Let our protective rulers rise from their lethargy and assist the architect by legitimately condemning and preventing a continuance of such conditions. A man may do what he inclines to within his own gate, but a city is the people's property, and the people have a right of say in anything affecting its development and amenity.

Street Improvement Generally.

It appears that boroughs of the Kingdom have expended about 30,000,000*l.* during the past quarter of a century on street widenings and other like improvements. Part of this was spent for the demolition of buildings which, under proper supervision and control, ought never to have been placed as they were What our city's proportion of this sum may be is not stated, but it is not inconsiderable. Then why are we repeating the error in narrow thoroughfares, crowded tenements, and absence of the relief of a cheering green plot among acres of causeway?

The disregard of directness in thoroughfares and allowance for open spaces in town planning has many evils besides those arising from lack of facility of intercommunication, increase of danger from fire, etc., but the evils are obvious. On the Continent the practice of preliminary plans for large areas has been in vogue for years, and few who knew Paris of fifty years ago, with its irregular narrow closes, can be other than admirers of the magic wand which has made modern Paris the beautiful open city it is. "Garden Cities" may be difficult to make out of a town, but open spaces with gardens well cared for, wide streets and broad tree-planted pavements, can be arranged for, and will make a city "beautiful" with ample amenity.

Another serious matter hangs upon that of town planning. It is the wrecking of localities by the acquisition of a fair site intended for villas and dumping down

tenements upon it. The speculator takes the risk, because the temptation of resultant profit is a rich one. But his gain is at the expense of the owner immediately adjoining or opposite, the value of whose villa is depreciated fifty per cent., because he prefers loyally to abide by the Feu Charter. Should not the speculator who obtains the profit (unearned) be required to pay to the unfortunate sufferers something towards the serious loss they incur by his act? A villa suburb was recently invaded by a speculator, who was repelled only by those adjoining taxing themselves and buying him off. His effort could only have been accomplished by an evasion of the Municipal Acts as regards the width of the fronting road, and this the Dean of Guild Court seemed prepared to permit.

Unless these matters are remedied by special Acts no city is safe from having its amenity and beauty unworthily disfigured and proprietors of villas practically robbed of half the value of their properties.

Building Regulations of Edinburgh.

A Bill is being promoted, we understand, to amend and improve the building regulations for the city. On reading of the intention, this Association represented to the clerk of the Dean of Guild Court its willingness to appoint two or three of its members to confer with the Court towards giving any help its experience enabled it to do in framing the new rules; otherwise, to peruse and study the draft of the Bill and offer suggestions before extension. The request was refused without any reason assigned; nor can we conceive any reason. As a public Association, interested perhaps more than any other in watching the amenity of the city, it seems inexplicable that such an offer, made solely in the interests of the citizens, should be so treated.

With the results before us as witnessed in the extensions of the city during the last forty years, we can read the lesson they teach. It seems obvious that most of the errors we now deplore can be amended only by feuing lands being schemed as a whole, and not in sections; that main routes should be wide enough (say, from 100 to 120 ft. between buildings) to cope with the increase and in kind of vehicles; that no projection for shops or otherwise be allowed beyond the original building frontages; that garden spaces should be provided at reasonable intervals; that where the lands are to be laid out for poorer class tenants open spaces for children's playgrounds should be provided on a much more liberal scale than the miserable "sunless" back "greens"—euphemistically so-called—of the present-day regulations. Houses of a like class should be kept in groups. Tenements of six and seven roomed houses not fronted by those of three rooms, nor thoroughfares with villa residences fronted by tenements on the opposite side.

It probably would be a wise proceeding were city corporations invested with power to acquire land in suburban districts when at agricultural prices, anticipate feuing schemes, and thus go a long way towards assisting the desirable accomplishment of better housing, more open disposition of building blocks. Mr. John Burns' Bill, now before Parliament, is in the right direction, and will, it is hoped, level up the housing and air problem to a platform on which every right-minded citizen would be glad to see it. It is a step in the direction of improving the physique of town dwellers, of brightening their lives and checking diseases, and by bringing inhabitants from their infancy into liberal air space and sunshine, they will grow up healthier and happier citizens.

And now a few words affecting the daily exercise of our profession.

During the year a large accession of strength has been secured to the Royal Institute of British Architects by the attachment to it of a large number of the members of this Association. This is also an elevation of the status of, and a strength to, the profession in Edinburgh; because through this connection we can take a higher platform before the public, who in turn may find greater confidence that in our hands their interests will be conserved.

Competitions.

Perhaps one of the most important events of the year to the architectural community is the recently closed competition for the London County Hall. It is the largest work of the kind that has been before the public, for over 150 individual architects of several nationalities entered the lists, and from among them ninety-nine complete sets of designs were submitted. The labour on the plans occupied the best part of a year, and at the end of the long blast of trumpets a young man not far from the door of the site is to be congratulated upon his success in winning the prize. If we take a small average cost to the authors of the ninety-nine designs at, say, 500*l*., we have the not inconsiderable sum of 49,500*l*. contributed by architects to this great scheme. For this outlay the London County Council paid about 4,600*l*. to a few of us who gained premiums. Is there not very great wastage of time and money to the profession here? Cannot a satisfactory end be attained by clients without so thoroughly trifling with the too great willingness of the profession to respond to the call of corporations and committees? Could not twenty men of accredited reputation be selected and offered a limited sum towards preliminary expenses in a competition? It would be surprising if a completely satisfactory design were not thereby produced. The privilege of committees inviting architects to enter competitions is much abused in practice. Their specifications of requirements are often very loose, no assessor is promised, no premium is offered, and indeed every point of information required is laid out so indefinitely in the conditions as to prompt serious irregularities by competitors.

Members of committees are usually business men taking part in the commercial life of a city. They know they could not undertake to give gratuitously of their wares to the value of 20*l*. or 30*l*. each on a mere chance of receiving an order of five or ten times those sums; yet in their collective capacity as a committee this is what they ask architects to do for them. Do lawyers, doctors, or civil engineers have to pay similar toll? We have not heard of the practice. Then why should architects? The remedy is in the hands of the profession, if it would be loyal to itself. Competitions are legitimate, but should be of limited invitation, and each one invited should be allowed an honorarium towards his outlays. More earnest work would be done, consequently a better result would accrue to the clients if they only knew it.

For the betterment of our students it is gratifying to recognise how much in recent years has been done, and it is creditable to the young themselves that they have exhibited very enthusiastically an increasing desire to take advantage of every opportunity to improve themselves by the art schools' teaching, and our Association's prize scheme for designs.

Schools.

In no department of teaching has there been more manifest change than in that of art. Nearly fifty years ago the science and art system was in full operation. Schools were established in all leading towns and excellent results were for a time obtained. The Royal Scottish Academy schools existed before that time. The Government schools were recognised in time to develop rather a mechanical method, and are discontinued in favour of the freer handling of drawing under the applied art school of our city. And now a greater change than any previous will soon be ushered in in the form of the College of Fine Arts and Decorative Arts and Crafts, which shall unify all the teaching under one local governing body. The new school of art materially and administratively is taking form, and in both cases it gives promise of fruitful results by carrying on the traditions of our city as a home of art. This position is claimed for it as much from its architectural monuments as from its successes in sculpture and painting. Though the history of Edinburgh's art progress is also a history of its struggles and disappointments, it has risen above them all, and in the new home its light as an art centre will burn with still greater brilliancy and spread wider by being fed with the more liberal illuminant from the Imperial Exchequer.

The value of academic teaching is often adversely criticised as tending to fix conventional methods and destroy the spirit of freedom and individuality; but academies are necessary and essential. Every student requires a knowledge of the elements of drawing and modelling, whether gifted as a genius or not, and no one was ever hindered in his art by having had to be for a time under academic training.

The new school should undoubtedly be based upon an architectural lead and be organised for the decorative and industrial arts as in art schools elsewhere. Painting and sculpture from the life will, it is expected, be continued by the Royal Scottish Academy as at present. With the opportunity thus offered, this Association should keep itself closely in touch with the administration of the school and assist it so far as it may be permitted by suggestive co-operation. The teaching should be co-ordinate with the requirements for examination of the Royal Institute of British Architects, as being best suited also for the everyday study and practice in offices. Attendance at the classes is recommended as a necessary part of an architect's education, and possibly the Royal Institute of British Architects may, as in the Glasgow School, accept the diploma of this school as sufficient to exempt the student from the Institute's preliminary and intermediate examinations.

And now my thoughts should cease. It is quite obvious they are not exhausted; the subjects creating them are too extensive and vital. Yet I pass them on more in a suggestive spirit than as matured ideas, chiefly to keep alive the offtold tale of what are the essentials for an architect's practice.

LETTER FROM PARIS.

THE creation is announced of a new Parliamentary Department ("Groupe Parlementaire") which is to occupy itself specially with questions concerning the Theatres and the Fine Arts. It will be its duty more especially to superintend the organisation of the national museums and of French exhibitions.

The "Vieux Paris" Committee, at its last meeting, was occupied again with the subject of the erection of buildings of disproportionate height to their surroundings, especially when they break the general line of an important street. High buildings, it is urged, may be very well in the new cities of America, but they are not desired in Paris, where they interfere with the scale of existing streets and monuments. M. Bouvard, the Directeur des Travaux to the Municipality of Paris, has announced that, in future, legal proceedings will be taken against any building-owners who carry out additional structures not in conformity with the designs first put forward and formally approved by the authorities. Approval of this decision is coupled with the regret that it comes rather late in the day, the line of the Rue de Rivoli having been already intruded on by a monster hotel which materially injures the perspective of the street; not to speak of the other cases of abnormally high buildings in the Place de l'Etoile, which it is now too late to prevent.

The Vieux Paris Committee has also been interesting itself about a new discovery of a portion of the boundary wall of the ancient city of Lutetia, which has been discovered in

the neighbourhood of Notre Dame, between Rue Chanoinesse and Rue des Ursins. From the construction it is judged to belong to one of the early invasions of Gaul in the IIIrd century.

An important section of the cross-line of the Metropolitan, from north to south, which connects the extremity of Montmartre with the Montrouge quarter has just been opened. The section just completed starts from the Porte de Clignancourt, ending for the present at the Châtelet. It will cross twice under the bed of the Seine, when the work, which has been delayed by strikes, is completed. Another subterranean line is also carried under the Seine to Place de la Concorde. This latter line has caused some anxiety as to its effect on the Place itself, which has been partially closed to traffic; and Gabriel's fine building of the Ministère de la Marine, at the head of the Place, has also been supposed to be in some danger of disturbance; but an examination of the work, made under the orders of the Secretary of State, has shown that though there has been a very slight movement of the building, there is no cause for anxiety as to its permanent security.

A few days ago a building was completed in Paris the object of which is to furnish artisans with a workshop in close connexion with their habitation, so that they could carry on work in an atelier, almost in the midst of their family life, and with electric power supplied to drive any machine tools required in their work. This building, of which M. Cintra is the architect, stands in the XIXth arrondissement, at the corner of the Rue d'Allemagne and the Passage de Melun, in one of the most crowded quarters of Paris. It has been built from the funds furnished by a legacy made to the Société Philanthropique, of which Prince d'Arenberg is the President. The building, six stories in height and with attractive architectural appearance, has on each story eight workshops; forty-eight "atelier-logements" in all. On the ground level is a covered playground for children, and a complete installation of *douche* baths. On each story the tenant can have, at a rent varying from 500 to 700 francs a year, a workshop with electric power communicating with a large and well-lighted habitation. The roofs are utilised for washhouses and for gardens. It is an interesting innovation, and the Société Philanthropique proposes to repeat the experiment in other artisan quarters of Paris.

The death is announced of M. Emile Gebhart, member of the Académie des Sciences Morales and of the Académie Française, and a former member of the Ecole d'Athènes. He was the author of some excellent works on art; "Praxiteles," an essay on the history of the art and genius of the Greeks; an essay on "*Genre* painting among the ancients"; and studies on Botticelli and on Michelangelo. His writings show the combination of exact knowledge with an admirable literary style.

THE NEW GALLERY.

THE twenty-first summer exhibition at the New Gallery shows more clearly than ever that this institution has ceased to represent any definite or separate aim in contemporary art. It is merely a miscellaneous collection, smaller and less representative than the Royal Academy, and including works which would hardly have been admitted at Burlington House.

The strength of the exhibition is in the landscapes, of which there are several of exceptional power. Mr. Arnold Priestman has made a grand picture out of the often-painted subject of "Walberswick" (163), making the most of the great expanse of sky on that flat coast; and Mr. Hughes-Stanton sends another of the large and solidly built-up studies of the coast country of the Pas de Calais (169), to which he has devoted himself lately, and by which he has greatly heightened his reputation. The present picture is not quite equal to its predecessors, but it is a landscape with a definite aim about it. So, in a different school, is the fine cliff scene by Mr. Adrian Stokes, "O Beata Solitudo!" (196); and to these we may add Mr Michie's "Picardy Uplands" (219), Mr. Leslie Thomson's "The West'ring Sun" (238), a sunset coast scene; and Mr. Cameron's "A Yorkshire Harbour" (268), shown at sunset, with the harbour buildings making little more than silhouettes against sunset sky. All these are landscapes with a distinct aim, and something more than mere representations of scenes. And Mr. Napier Hemy exhibits one sea-piece, "A Passing Squall" (24), a small work, but which he has never surpassed in giving the impression of the weight and movement of a stormy sea.

There are no figure pictures to signify much; Mrs. Stokes's "Death and the Maiden" (59) is clever, but does not give any impression of the supernatural; and Mr. R. Frampton's attempt at the legend of "St. Brandan" (84) and Judas, as treated in Matthew Arnold's poem, can hardly be considered a success; so far from adding anything to the impression of the poem, it weakens it. In figures grouped with landscape Mr. Wetherbee has produced a charming idyll in "The Swing" (89), the figures exactly sympathising with the landscape. Mr. Brangwyn's "The Rajah's Birthday" (223) is a clever suggestion of how a picture *might* be made of the subject, if he had chosen; it is what the French call *barbouillé*—in plainer English, "smeared"; and, whatever the painter's acknowledged genius, we cannot call such a thing a picture. Mr. Llewellyn's "Andromeda" (191) is less commonplace and less of a mere nude study than are Andromedas generally; there is a certain mild sentiment about it, and it is a well-studied figure, but does not appeal to one strongly. There are, however, some fine portraits. Mr. Sargent's "Miss Vickers" (222) is full of character both in attitude and expression. Mr. Henry shows his capacity for the effective placing of a single highly-wrought figure in the middle of a canvas in his full-length portrait of the Marchioness of Tullibardine; and Sir George Reid's portrait of the American Ambassador (255) is both masterly and dinigfied.

Among subjects in which architecture is treated is Mr. Sidney Lee's large painting of "The Cathedral Entrance" (135), in which however he seems to have been more occupied in giving a realistic impression of the surface of stone-work than in realising architectural effect in the higher sense. Mr. Melton Fisher's "The Monastery" (120) is an effective landscape group of buildings and trees; Mr. P. Norman exhibits a topographically interesting small view of the site of "Christ's Hospital, Cleared for Buildings" (2), which may some day be as historically valuable as Shepherd's views of London buildings in the early XIXth century period now are; and Mr. Reginald Barratt gives a rather new view of Venice "From the Public Gardens" (6), as well treated as his Venice pictures always are.

The visitor is faced, in the Central Hall, by a very large and finely executed tapestry—"Arras tapestry" it is called, we know not why—executed in the atelier of Messrs. Morris & Co., from the last cartoon made by Burne-Jones. The subject is "The Passing of Venus," from the old poem the "Roman de la Rose"; and in this case the style of the design and drawing answers very well to the period and style of the poem. Whether this kind of revival of early Renaissance feeling in painting will retain its vogue is another matter. We fancy the Burne-Jones style is already losing its hold on the educated public (to the uneducated, of course, it never really appealed). This is a good piece of decorative tapestry, but it looks like a restoration of an old piece, not like a modern work. Mr. Brangwyn's work would be the stuff for modern tapestry, if he would only think so. The sculpture is not of much account; the most interesting work is the large circular medallion in alto-relief, "The Spirit of Music," by Miss Esther Moore, who is always original and poetical in her sculptural inventions. Two cases of work by the eminent French jewellers, Lalique and Gaillard, have all the exquisite finish characteristic of modern French work of this kind, with that kind of unwholesome style about them which one cannot well define, but which is alien to the mind of the English decorative artist.

STAINED GLASS.*

THE subject of stained glass as a whole, dealing as it does with an art nearly, if not quite, as old as architecture itself, and with a history no less interesting, it is obviously impossible to treat adequately within the compass of a short paper such as this must necessarily be.

The first difficulty we have to meet is the profound ignorance of most of our clients on all matters connected with stained glass. I do not think one person in twenty of the general public has the remotest idea that the blues, reds, greens, and local colours generally are not painted on white glass like a picture is painted on canvas, they generally seem greatly surprised when shown a sheet of "antique" or a slab of "bottle" glass, and they are usually most anxious that all leads and iron-bars should be dispensed with. But in spite of this, anyone giving a stained-glass window to a church considers himself perfectly competent to criticise a design. We stained-glass men labour under a great disadvantage as compared with architects, for whereas competition drawings for a building are examined by competent assessors who know their work and are capable judges, our sketches and designs are usually judged by a committee of the general public who know nothing whatever of the art, and are quite incompetent to judge of how the design will appear when completed.

The sketch having been approved, the process of making the cartoons is the next and perhaps the most important stage of all. I think that one of the first things we have to remember is that we are not painting a realistic picture, but are merely attempting to decorate the glass in harmony with the surroundings. In the first place, we can get no real atmospheric effects in glass, so it is essential to keep our picture simply on one plan as the old stained-glass people did. I admit that by using enamels it is impossible to obtain realism, but I do not consider that we can properly admit enamelling into stained-glass.

Another thing that renders realism impossible is the necessary use of leading in the window, and this cannot and should not be concealed. In making the cartoons too much trouble cannot be taken, not only in the designing but also in the drawing, which should be just as carefully studied from nature as in the case of the painting of the picture, though certain conventionalities are admissible. In fact, it is not possible for the painter to depart much from the cartoon itself, as each piece of glass has to be traced separately, though one important line may be running through several different pieces. When the cartoon is drawn out it is usual to fix the main lines of the principal leads round the different areas of glass where different colours are in juxtaposition. Our next step is to make what is known as the cut-line tracing. This tracing merely shows the outline form of the window with the lead lines marked on the cartoon, and is a chart for the use of the cutter, showing the sizes and shapes of the different pieces of glass of which the window is composed. In making the cut-line tracing care has to be taken that the thickness of the lead when the window is glazed up does not interfere with the painting of the glass, and for this

* A paper read before the Discussion Section of the Architectural Association, by Mr. Archibald K. Nicholson.

reason it is usual to cut the glass rather full round the figures and parts of the window where any cutting off or reducing would be undesirable.

We now come to the all-important stage where the glass has to be chosen and the artist colours his design. I would mention that the glass in general use may be classed as "antique," which may be either "pot-metal" or "flashed." Roughly speaking, the "antique" glass is blown at the end of a tube into the form of a cylinder, which is opened out at the end and sides and allowed to curl out flat on what is called a "flattening" stone. The glass is described as "pot-metal" when the colour is constant throughout the depth of the sheet.

The flashed-glass is made in two layers, one colour being superimposed on another. This is done in the following manner:—The bulb of glass at the end of the blower's tube is dipped into another colour of glass before the bulb is blown out to its full size, and the thin film of this colour spreads over the foundation glass on which it becomes firmly fused.

The main portion of the window is usually composed of the "antique" glass, but its richness may be much enhanced by the judicious use of "bottle" glass. When the glass has been selected and marked off to show the position each piece is to occupy, the cutter then places the glass on the cut-line tracing, and with a small wheel cuts off each piece to the size and shape required.

Having cut the glass, we pass on to the next stage—the painting of the window—and it would here be worth while to consider for a moment the nature of the pigments we use. There are two or three manners of painting which all lead to the same result. The usual and, I think, the simplest way is first to trace the outline on each piece of glass direct from the cartoon and then to have it fired. For the purpose of tracing the pigment is mixed with sufficient treacle of sugar and water to cause it to adhere to the surface of the glass. The pigment is then fired with a "light" fire sufficient to tack it to the glass. We now lay out the original cut-line tracing on the bench, and over it place a large sheet of plate-glass—known as the glass-screen. Each piece of glass must now be laid out on the screen in its proper position and held there by hot wax dropped into the interstices between the pieces of glass. The screen with the glass fixed on it may now be raised on to the easel specially constructed to let the light pass freely from the back and illuminate the glass, and we shall now see before us the window, or a portion of it, on which the outline of the design appears. The next process is the painting of the lights and shadows, and for this purpose we mix the same pigment as before with gum arabic and water, instead of the treacle or sugar. The whole surface of the glass is now covered with an even depth of colour, which is smoothed off with a large flat brush. When the pigment is thoroughly dry the painter now commences to copy the light and shade as shown in the cartoon, and this work is done rather in the same style as mezzotints, and is the exact opposite of ordinary pictorial work on canvas, for we work from the dark surface to the highest lights, which, in the case of coloured-glass, may be the pure local colour itself entirely cleared of pigment.

In dealing with the glass on which the flesh is painted, which is usually of a greenish hue, it may be found advantageous to retain a light film over the whole surface and to allow of no absolutely pure lights, for in practice one finds that these pure lights, when taken out and surrounded by tone, are liable at a distance to seem too prominent and cause distortion of the features, even though they may look quite in place on the easel.

When the window has been painted throughout in the manner described, the high lights having been taken out and the regions of half-tone and deep shadow left on the surface of the window, the glass is taken off the easel and again fired, this time very much more strongly, and the work will be ready for its second painting. The same process is repeated, only that now we have to consider where lines and shadows have to be strengthened. It will be found that a great deal of the colour has disappeared in the kiln, and it will probably be necessary to paint the whole of the glass again.

The painting and firing of the glass having been completed, we now come to the process of applying the silver or yellow stain, the only local colour we are justified in using. This stain is composed of nitrate of silver, mixed in varying proportions with "lake," in order that it may be easily manipulated. The lake, of course, disappears in the kiln, leaving the nitrate of silver, which becomes yellow when fused with the glass. I should add that stain is always painted on the back of the glass, and ought, owing to its sensitiveness, to be put on last of all and separately fired.

We will now consider the all-important question of the firing of the glass. There are various sorts of kiln in use, but let us take first the old-fashioned coke-kiln, which is probably made on the identical lines of those used in the Middle Ages. It consists of a brick chamber, in which the glass is laid on iron plates on a bed of whitening, one plate above another, and then closed up. Heat is then raised with a coke-fire until the glass and pigment are sufficiently fused, when the fire may be drawn and the contents allowed to cool down. Of the modern gas-kilns, there are two or three kinds; in one sort the flames are allowed to play in the actual chamber in which the glass is lying, and in another the glass is placed in an iron-box or muffle, as it is called, at the sides and top of which the flames play, causing the glass to be heated till the pigment is fused. This latter is, I believe, the most modern of gas-kilns, and I have used it for a long time with complete success, and find it most clean and easy to handle.

A good test as to whether or not the glass is sufficiently fired can be made by holding a bright metal-rod over the surface, which, if it reflects in the glass, will show that it is fused. While No. 1 plate is firing, No. 2 plate is taken from the back and placed in the annealing-chamber till No. 1 has fired; when No. 1 is taken out and replaced in its proper shelf in the rack, No. 2 is put in the firing-chamber, and so on. By working the plates from the rack in this order you will see that the shelves become hotter as each successive plate is returned from the kiln, for as heat rises the temperature in the upper shelves will be raised as each successive hot plate is put in. In this manner we go on firing as many plates as may be required. Some hours should elapse before the glass is taken out of the rack, and if possible it is as well to leave all the glass shut up in the rack till the following day, so that it may not be too rapidly cooled.

The window will now be ready for the last process—the glazing. The cut-line is now laid out on the glazier's bench and the various pieces of glass placed in their proper relative positions to each other. We now decide where the divisions of the window are to be made, and lay out a culm of lead across the positions of the division. This piece of lead is held into position by a nailed batten ranged along the side opposite to that on which the glazing is to be started. Each piece of glass is now surrounded by leads of various widths and depths to take the varying thicknesses of the glass, and as each piece is finished nails are tacked round to hold them in position till the adjoining piece is put in. When the white light has been glazed up in this manner it is held together with battens nailed round it, and each joint is soldered up with a specially constructed gas-iron; the light is then turned over and in the same manner soldered on the reverse side. We now solder the copper-bands on, which should be on the same side as the iron-bars of the window and exactly opposite the position these bars are to occupy, so that they may hold the glass to the bars and support the weight of the window. When each section is thus completed we only have to rub the putty or cement into the leads and the window is ready to fix.

NOTES FROM SCOTLAND.

RESTORATIONS.

WE appear to have entered upon a period of activity in the restoration and renovation of our old buildings. And not only is this the case with buildings of an ecclesiastical character, but attention has lately been turned to the old castles and keeps which abound throughout the country. Restoration, in the hands of the most competent expert and under the most advantageous circumstances, will always have its critics. The public generally do not see the necessity for it; the antiquarian dislikes it for its own sake; and those who do not range themselves under either of these two categories have the suspense, born of past experience, of anxiously waiting till the completion to award praise or blame. There have been restorers for some hundreds of years, and it is an unquestioned fact that several buildings owe their present ruinous condition to the fact that they were restored. Much good work, however, has been done in this direction during the past two decades at Dunblane, Brechin, Paisley, Culross, and elsewhere, and it is because of this one welcomes such efforts as are now being put forth to reclaim old edifices from decay and uselessness to the purposes for which they were originally intended.

The Cathedral of Dunkeld is a case in point, as through the munificence of a private donor the choir is to be restored as a place of worship, the architects being Messrs. Dunn & Watson, Lincoln's Inn-fields, London. The choir is of special interest to the Scottish people, as in it Christian worship has been continued uninterruptedly since the cathedral was built; indeed, on the site, if not in the actual building, since the coming of St. Columba. No doubt this restoration will evoke criticism, but should the work consist only of removing all traces of the restoration of 1820, conceived and carried out in the spirit of that time, then a good work will be accomplished. The action of the restorers with regard to the old castles is difficult to understand. It is hardly conceivable that they are intended as places of abode, as the ideas of comfort within a house are somewhat different from those prevailing in the XVIth century. They stand, many of them, in lonely places, sentinels of a long past, the sole survivors of a race which gave rulers to their country, and who, when their Prince called them, left their homes, joined their fortunes to his, and—did not return.

EDINBURGH EXHIBITION.

The Scottish National Exhibition at Edinburgh was to be opened on May 1 by Prince Arthur of Connaught. It is intended to commemorate the union of Parliaments in 1707, and promises to be on a scale commensurate with the occasion. The Exhibition buildings proper, comprising the Industrial Hall, Machinery Hall, Fine Art Gallery, and Concert Hall are now complete, and their fine proportions can now be seen to advantage. Though the Exhibition is of a purely Scottish character the whole conception is of a more than local interest, and will illustrate better than anything else could the growth and expansion of the country since the time of the union, as well as give an insight into the condition of things prior to that event. The architects are Messrs. Walker & Ramsay, Glasgow.

PROPOSED PHTHISIS HOSPITAL AT BANGOUR.

At a recent meeting of the Edinburgh District Lunacy Board there was under consideration a proposal to erect at Bangour

an isolation hospital or sanitorium for the phthisical insane. It was remitted to the Works Committee to inquire as to the most suitable materials and to receive plans after consultation with the superintendent as to the site. The architect is Mr. Hippolyte J. Blanc, R.S.A., Edinburgh.

RESTORATION OF OLD GREYFRIARS CHURCH, ELGIN.

The restoration of the Old Greyfriars Church in Elgin, an ecclesiastical edifice of great interest, is to be completed. The work of restoring the old building was commenced by the late Marquis of Bute, but at his death operations were suspended. Lady Bute has now undertaken their completion on a modified scale, and it is expected the work will be proceeded with shortly.

MUSEUM, ST. ANDREWS UNIVERSITY.

Mrs. Bell Pettigrew, St. Andrews, has generously offered to the University of St. Andrews the sum of 6,000*l.* towards providing a museum. The gift is intended to commemorate the long association with the University of her husband, the late Professor Bell Pettigrew. The present museum in the College buildings has long been at a disadvantage owing to the inadequate accommodation availabe for the collection. The University Court has made up their minds to combine the erection of a new museum with the enlarging of its Botanic Garden and the provision of greater facilities for the practical study of botany.

DESTRUCTION OF MONZIE CASTLE.

The old castle at Monzie, three miles north from Crieff, has been destroyed by fire. The fire originated in a chimney of the servants' hall, and, fanned by a northerly breeze, spread rapidly to the main building. The damage, estimated at 20,000*l.*, is an irreparable one, including, besides the old castle itself, much valuable and antique furniture, pictures, and sculpture. The older portion of the building is believed to date from 1634, and this was added to and enlarged at the beginning of last century by the late General Campbell, of Monzie. The present proprietor was preparing to resume occupancy of the castle when the disaster occurred.

QUEEN VICTORIA MEMORIAL SCHOOLS, DUNBLANE.

This school for the sons and daughters of deceased soldiers and sailors who lost their lives in the South African War is about to be extended. The Council, consisting of Col. P. D. Trotter, the Earl of Mar and Kellie, and others, at a recent meeting of inspection, selected a site for the erection of a memorial chapel, the plans for which were approved. It was also decided to proceed with a scheme for additional water supply for fire extinguishing purposes at a cost of 5,000*l.* The schools occupy a beautiful position in the very heart of the country, and in close proximity to the garrison town of Stirling. The architect is Mr. John A. Campbell, F.R.I.B.A., Glasgow.

COTTAGES AT SWANAGE.

THE pretty seaside town of Swanage, of which Charles Kingsley has left us so delightful a description, possesses some of the most massively-built stone cottages to be found anywhere. These stone-roofed and irregular buildings are contained in the one long mile which constitutes the old town, as distinct from the more fashionable quarters provided for the summer visitors.

The illustration is from a sketch by Mr. Sidney Heath.

THE COST OF CLEARING STREETS OF SNOW.

WHEN there is anything of a heavy snowfall in London, we not unfrequently find people writing irritable letters to the papers commenting on the neglect of the public authorities in not at once clearing the streets of snow; letters which often show a total inability to realise what the whole bulk of snow (say) 4 in. thick in a mile of street amounts to, and how many men and carts would be required to clear it within twenty-four hours.

The following extract from the last Annual Report of the Borough Engineer of Hackney gives some information on this head which may be useful to open people's eyes to facts, while it testifies also to the energy and resource of the Hackney Borough Engineer:—

"The following particulars are of interest with respect to the snowfalls which occurred on December 26, 27, and 28, and the extra work involved in connexion therewith:—

On the 26th the fall which took place during the early morning hours amounted to a depth of 4 in.

On the two succeeding days further falls amounted to 1·2 in. and ·8 in. respectively in depth.

The total quantity which fell during the three days is estimated to have been equal to a deposit of 22,500 tons on the public roads and streets of the Borough.

Notwithstanding the added difficulty which arose from the fact that the first-named day was a public holiday, the situation so unexpectedly created was most expeditiously dealt with. Within a few hours of the cessation of the fall the Council's snow-plough, drawn by four horses, was at work clearing the main thoroughfares for vehicular traffic, and was followed by the horsed sweeping machines. By eight o'clock in the morning, nearly 800 extra men had been taken on for work in clearing the snow from footways and carriageways, and by the time work ceased for the day, practically the whole of the leading thoroughfares of the Borough had been dealt with.

On the following day, December 27, owing to the further fall which had taken place, the same thoroughfares had again to be worked upon, and, in addition, the footways were cleared in a large number of side roads and streets. Also the removal of heaped-up snow from main thoroughfares was commenced. On this day the number of extra men employed was 1,320.

During the night of the 27th and the morning of the 28th a third fall took place, so that on Friday, December 28, the main thoroughfares again had the principal claim to attention. Afterwards work was proceeded with in other roads and streets, but with much greater difficulty, the frost hardening the snow very much under the traffic, and causing it to adhere with great tenacity to the surfaces of the footways and carriageways. The clearing of the main thoroughfares from heaped-up snow was also proceeded with, and was practically accomplished before the close of the day, only isolated short lengths remaining. Nearly 2,100 men were employed on this day, some of them being kept at work until a late hour sanding and salting carriageways and footways, the continuing hard frost rendering this course necessary at many places, as a matter of public safety.

On Saturday, December 29, there were dealt with almost the whole of the remainder of the side roads and streets, which by reason of the exigencies of the situation had previously been only partially attended to, and by the time work ceased on this day, ending the week, the work of clearing the snow and ice from the whole of the footways within the Borough had been practically completed. The number of extra men employed on this day was 1,420.

Taking advantage of the rapid thaw which followed, 375 men were engaged on Monday, December 31, and 155 on Tuesday, January 1, for the clearing of snow and the sweeping of roads and streets and to assist in loading carts.

During the period covered by the foregoing report, more than 6,000 loads of snow were carted from the main thoroughfares and the tramway and omnibus routes within the Borough. Of this quantity, 2,154 loads of the cleaner portions of the snow were discharged into public sewers at nine suitable points, where the gradients and

the flow of water therein were such as to ensure a rapid breaking up, melting and carrying away of the material. The remainder of the loads were temporarily deposited at various convenient places within the Borough.

The number of carts employed on the work varied from 106 on Thursday, December 27, to 191 on Saturday, December 29.

The whole cost of the work of clearing, removal, and carting is estimated to have amounted to about 2,000*l.* Of this, nearly 1,650*l.* was in respect of payments made for extra labour employed and for extra time worked by the Council's regular employees."

MINOR PICTURE EXHIBITIONS.

The Leicester Galleries.

At the Leicester Galleries is an exhibition of water-colours by the late J. Buxton Knight, who as a water-colour artist is certainly over-rated in the memoir prefixed to the catalogue. It seems a kind of practice now to take up certain artists who are not much known to the general public, and push them into an exaggerated importance. The feeling for nature, and the desire to give pure open-air effect is obvious in these drawings, but their execution is often what we call ragged and unsatisfactory. In an adjoining room in the same gallery is a collection chiefly of portraits by Mr. Harrington Mann, the majority of which strike us as studies of colour and character rather than portraits in the full sense of the word; that is to say, the face in most of the pictures seems the least important element and the least studied. As a pictorial composition "The Red Hat" is very effective; and the portrait of "Mrs. Harry Lindsay" is an effective composition on the lines of Gainsborough; but the collection generally represents a rather superficial art.

The Baillie Gallery.

At the Baillie Gallery is a collection of the works—oil-paintings, mezzotints, and etchings, of the late Mr. John Finnie, a Scotchman by birth, but best known in Liverpool, where he was for forty-one years Headmaster of the School of Art, and was also for some time President of the Liverpool Academy. He had more than a local reputation, however, and exhibited many times at the Royal Academy and occasionally at the Salon. Among his larger oil-paintings at the Baillie Gallery "The Raincloud," which was exhibited both at the New Gallery and the Salon, is a very remarkable picture, of great power and originality. The large collection of his mezzotints, an art which he took up late in life, contains a great deal of fine work.

The French Gallery.

Of the small exhibitions just opened, however, that at the French Gallery in Pall Mall East is the important one. This contains one of the finest examples of Diaz we have ever seen, "The Pool in the Wood": some beautiful small pictures by Corot and Harpignies, two very fine works by J. Maris, a large and fine example of Clays's calm water and lazy ships, and two important pastel landscapes by M. Lhermitte: a list of items enough to give distinction to any picture exhibition.

Architectural Societies.

Nottingham Architectural Society.—The annual general meeting of this Society was held on Friday, April 24. The membership now numbers eighty. The first business undertaken by the Committee last session was the revision of the rules and the arrangement of a programme for the ensuing year. A new departure was inaugurated last year, when a Designing and Discussion Club was formed. The following officers have been elected for the ensuing year:—President, Mr. A. Ernest Heazell; Vice-President, Mr. R. Evans, jun.; Hon. Secretary, Mr. W. Brandreth Savidge; Council, Messrs. F. N. Booker, A. W. Brewill, J. Howitt, W. D. Pratt, E. R. Sutton, R. Spencer, A. Smith; auditors, Messrs. Ed. H. Heazell and S. G. Walker.

Edinburgh Architectural Association.—The annual general meeting of the Edinburgh Architectural Association was held last week at 117, George-street, Mr. Hippolyte J. Blanc, R.S.A., the retiring President, in the chair. The prizes in the associates' section competition were presented as follows:—Designs of a street front and for a golf club house—1 (5*l.* 5s.), W. J. Walker Todd; 2 (2*l.* 2s.), J. R. Mackay; 3 (1*l.* 1s.), A. W. Graham Brown. Design for a mural monument in a church (open to apprentices)—1 (2*l.* 2s.), S. Davidson; 2 (1*l.* 1s.), R. Brown. Office-bearers for the ensuing year were elected, among them being the following:—President, John Watson, F.R.I.B.A.; vice-presidents, James B. Dunn, F.R.I.B.A., and James G. Gillespie; honorary secretary, Colin B. Cownie, 17, York-place; honorary treasurer, W. G. Walker, C.A., 39, George-street; honorary librarian, James A. Arnott. Mr. Blanc then delivered his valedictory address, "Lessons from a Retrospect," which we give nearly in full on another page.

Engineering Societies.

The Institution of Civil Engineers.—At the annual general meeting of the Institution of Civil Engineers, held on Tuesday evening, April 28, the result of the ballot for the election of officers was declared as follows:—*President*, Mr. James Charles Inglis; *Vice-Presidents:* Mr. W. R. Galbraith, Mr. G. H. Hill, Mr. A. Siemens, and Mr. W. C. Unwin; *Members of Council:* Mr. J. A. F. Aspinall (Liverpool), Mr. B. H. Blyth (Edinburgh), Mr. C. A. Brereton, Mr. W. B. Bryan, Mr. R. Elliott-Cooper, Col. R. E. B. Crompton, C.B., Dr. G. F. Deacon, Dr. F. Elgar, Mr. M. Fitzmaurice, C.M.G., Mr. A. T. Grant-Dalton (South Africa), Mr. R. A. Hadfield (Sheffield), Dr. C. A. Harrison (Newcastle-on-Tyne), Mr. J. Hobson (Canada), Mr. W. Hunter, Mr. G. R. Jebb (Birmingham), Sir Wm. Thomas Lewis, Bart. (Aberdare), Sir George T. Livesey, Mr. A. G. Lyster (Liverpool), Mr. Thos. Matthews, Mr. A. B. Moncrieff (Australasia), Mr. A. Ross, Mr. J. N. Ryan (Dublin), Mr. J. Strain (Glasgow), Sir Frederick R. Upcott, K.C.V.O. (India), Mr. W. B. Worthington (Derby), and Mr. A. F. Yarrow. This Council will take office on the first Tuesday in November, 1908.

The Council have made the following awards for papers read and discussed before the Institution during the past session:—A Telford Gold Medal to Mr. W. Barclay Parsons (New York), a Watt Gold Medal to Sir Whately Eliot; George Stephenson Gold Medals to Sir John Ottley, K.C.I.E., Dr. A. W. Brightmore, and Messrs. J. S. Wilson and W. Gore; Telford Premiums to Messrs. F. W. Davis (Darlington), C. R. S. Kirkpatrick (Newcastle-on-Tyne), Hugh T. Ker (Glasgow), G. H. Scott, R. R. Gales, F.C.H. (India), and S. H. Ellis.

Fifty Years Ago.

From the *Builder* of May 1, 1858.

Professional Etiquette.

Birmingham Baths.

Sir,—Knowing your readiness in exposing all manner of trickery and fraud in matters of competition, not only on the part of committees, but also of unworthy members of the profession, I wish to call your attention to a proceeding of one of the competitors for the "baths" proposed to be erected in Woodcock-street, Birmingham. The course adopted in this case by the competitor in question (who is a son-in-law of one of the members of the Council), is the printing of a circular, with an array of testimonials, and forwarding a copy to each member of the Council, and the delivery of them the day previous to the meeting of the Baths Committee. Of course this could not be done without its being noticed abroad. A meeting of the competitors, resident in Birmingham, was the result, when the following resolutions were passed:—

"At a meeting of architects competing for the proposed new baths, Woodcock-street, held this day, the attention of the meeting was called to a printed circular signed by ———, with testimonials attached thereto, the object of such circular being to create a bias in favour of the plans submitted by him, to the prejudice of the other competitors, and a copy of which it was stated had been sent to each member of the council.

Whereupon it was unanimously resolved that the adoption of such a course is a breach of professional etiquette, and derogatory to its members, as having a tendency to lower the character of the profession.

It was also resolved that a copy of the above be forwarded to each member of the council, and to Mr.———. F. Empson, Chairman.

28th April, 1858."

Comment is unnecessary. By making the affair public, you will be conferring a great favour on the profession.

A Competitor.

*** There is some satisfaction in thinking that the standard of professional morality has risen during the last fifty years. So barefaced a proceeding as that described would hardly be possible now.—Ed.

Illustrations.

RENAISSANCE AND MODERN CHURCHES OF PARIS.

V.—St. Vincent de Paul.

THIS church stands very effectively on a kind of terrace which formerly dominated the convent of St. Lazare, the habitual residence of St. Vincent de Paul. The portico of Ionic columns is reached by a grand flight of sixty steps in front, as well as by two lateral staircases and an inclined carriage way. The principal façade, looking towards the Place Lafayette, with two towers 54 metres in height, is on the axis of the Rue d'Hauteville, descending to the Boulevard Bonne Nouvelle.

The church—which replaces a temporary chapel in the Rue Montholon—was commenced in 1824, by the architect Le Père; but the works were not long after interrupted, and were resumed in 1831, under Le Père's son-in-law Hittorff, who modified the original plan, and completed the building in 1844.

The sculpture in the pediment, representing the glorification of St. Vincent de Paul, is by Lebœuf Nanteuil. The statues on the façade are the work of Valois, Barre, Brian, Foyatier, and Ramey.

Internally the church includes a vestibule, and a nave with two aisles on each side separated by massive columns of the Doric order. Over the architrave in the nave is a lofty frieze which has been painted by Hippolyte Flandrin with a large composition on a gold ground, representing two long processions of apostles, evangelists, and saints along each side of the nave. The cornice above supports a small colonnade of Corinthian columns in front of a gallery lighted by rectangular windows filled with glass by Marèchal, of Metz. On the entablature over this colonnade rest eleven girders carrying a coffered ceiling between them, treated with a decoration in oak, with blue grounds and relief ornaments gilded, in a manner somewhat suggested by Byzantine work.

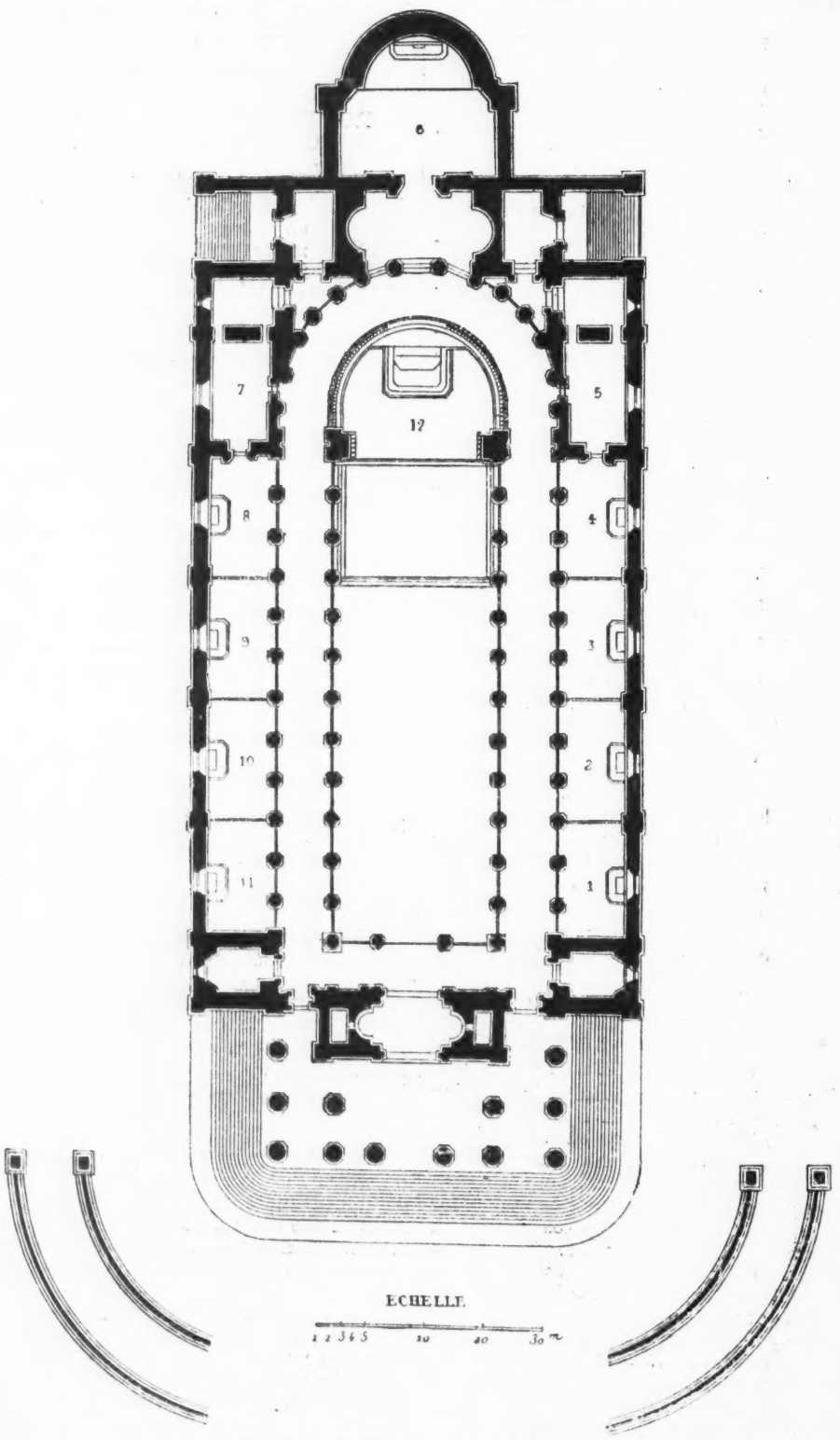
The semi-circular choir has a semi-dome on which Picot painted a subject of Christ enthroned and surrounded by saints. The stalls in the choir were sculptured by Aimé Mellet. A fine "Calvary" in bronze, for which Rude made the model, adorns the high altar; and the pulpit has a series of bas-reliefs sculptured by Du Seigneur.

Beyond the choir is the Chapelle de la Vierge, or what in an English cathedral would be called the Lady Chapel, the high altar of which has a marble group, "The Messiah," by Carrier Belleuse, which gained the Médaille d'Honneur in the Salon of 1867.

The building itself cost 4,200,000 francs, in addition to a total sum of 384,734 francs expended on the various decorative works.

The exterior of this church will no doubt be thought by many to be somewhat cold and formal, and with a very large expenditure of work and material on masses of plain walling. But it is precisely this liberal expenditure on the mass of a building that strikes us as a grand quality in these French classic churches. The whole long flank of this church, seen only in sharp perspective in the view, is one great mass of wall with pilasters at regular intervals, not very interesting in a sense; but the effect of it really arises, as in the case of the Panthéon, from that ungrudging expenditure on walling on a great scale, which contrasts so remarkably with the small and insignificant dimensions of our own Renaissance parish churches. But those who find the exterior ineffective in comparison with its scale will certainly change their minds on entering the church. The effect of these four rows of great columns, with the sweep round of the colonnade in a semicircle round the choir, is most stately and impressive; and those who only know the church by its exterior should take an opportunity of seeing the interior. For this reason we had wished to illustrate St. Vincent de Paul by an interior rather than by an exterior view; but our excellent photographer M. Lévy (to whom we are much indebted for the trouble he has taken in preparing these photographs, and for his sound judgment in regard to points of view) reported that considerations both of lighting and perspective would render it exceedingly difficult, if not impossible, to take an interior photograph which would give a just idea of the effect of the building.

We therefore abandoned the idea; but we recommend readers visiting Paris to take an opportunity of seeing the interior of this church.



Church of St. Vincent de Paul. Plan.

NEW LAW COURTS, HONG-KONG.

THE Victoria Courts, Hong-Kong, form part of a group of public buildings occupying a portion of the large area of land reclaimed from the harbour by the erection of the sea-wall designed by Sir John Coode, C.E., and the filling-up of the interval between the sea-wall and the rack. This filling was naturally of a loose and unstable kind, and it was necessary to resort to piles and concrete as a foundation for the intended buildings. Hardwood piles, some of them 50 ft. long, were driven through the made ground down to the level of the harbour-bed, and upon their heads a platform of Portland cement concrete was laid as a base for the superstructure. This important duty was carried out under the supervision of the Public Works Department, the present director of which is Mr. William Chatham, C.E.

The building under description, about two-thirds of which is completed, comprises on the ground floor accommodation for the Land Office Department, the Registrar, and other officials. The judges' private entrance is from the gardens, and a staircase with lift lead to their offices. On the opposite front are the public entrances with staircases and lifts to the courts floor. In the centre of this front is the prisoners' entrance to receiving-room, waiting-room, constables' waiting-room, caretaker's quarters, and the cells. From the room into which the cells open there is direct access to the docks in the larger and smaller criminal courts.

On the first or principal floor are placed the three courts—a large criminal court, a smaller criminal court, and a court for civil cases, all separately approached through ample corridors by the judges, the Bar, and the public.

The library occupies the centre of the façade, and, together with the courts, runs up through the second floor. The larger criminal court is crowned by a domed ceiling. Private rooms are provided on the principal floor for the Chief Justice, the Puisne Judge, and also robing rooms for the Bar, waiting-rooms for the jury, and also the requisite sanitary accessories. The portions of the second floor not absorbed by the upper portions of the courts are allotted to the Attorney-General, the Crown solicitors, and their staff of clerks.

The materials employed are Canton bricks for internal walls and for backings, and for the whole exterior a local grey granite, which is obtainable in such large blocks that architraves 15 ft. long are employed in the colonnades and in similar ample scantlings where required. The floors are fireproof, and the roofs are constructed of steel and covered with purpose-made granolithic tile slabs with conical covering rolls, in the manner of Italian tiles on a larger scale. All the joinery is of teak, including the court fittings, and the whole structure is of the most substantial character.

The works are being carried out by a native contractor, but the steelwork for the roofs was supplied by Messrs. Arrol & Co., the granolithic roof-coverings by Messrs. Stuart, the heating apparatus by Messrs. Wenham & Waters, of Croydon, and the sanitary fittings by Messrs. Doulton & Co. Messrs. Daymond & Son provided the models for the sculpture, which will be reproduced in facsimile in granite by native sculptors.

The whole of the work is under the control of the Director of Public Works and his staff of executive engineers.

Sir Aston Webb, R.A., and Mr. E. Ingress Bell, F.R.I.B.A., are the joint architects. The drawings are exhibited at the Royal Academy.

ST. LUKE'S CHURCH, WIMBLEDON.

THIS church, about to be built from the designs of Mr. T. G. Jackson, R.A., is provided to meet the wants of the large and increasing population which is springing up near the Wimbledon Park Station of the District Railway.

The church will be of brick with very little stonework, and will seat 740 persons. Adjoining will be a parish room to seat 250, with a classroom and a small kitchen.

The drawing is exhibited at the Royal Academy.

Competitions.

NEW MASONIC HALL, LEICESTER.—In a limited competition for a new Masonic hall for the province of Leicestershire and Rutland (Mr. S. Perkins Pick, F.R.I.B.A., assessor), the design of Mr. H. H. Thomson, F.R.I.B.A., was placed first; that by Mr. W. M. Cowdell, F.R.I.B.A., was placed second; and that by Mr. R. W. Bedingfield, A.R.I.B.A., was placed third. The estimated cost of the buildings is about 8,000*l.*

WESLEYAN CHURCH, BEN RHYDDING.—In a competition for new Wesleyan church at Ben Rhydding, near Leeds, Mr. Potts, of Messrs. Potts, Son, & Hennings, selected the design by Messrs. Garside & Pennington, architects, of Pontefract and Castleford, and they have now been appointed architects for the work. The church seats 250 in nave and transepts; there is also chancel, minister's and choir vestries. The buildings are to be erected in stone with green Westmorland slates, and the internal walls lined with red brick and plaster work, the whole of the internal woodwork being in Austrian oak. The total cost was 2,600*l.*

CHURCH BUILDINGS, BLACKHEATH, S.E.—The Committee have appointed Mr. Philip A. Robson, A.R.I.B.A., assessor in the limited competition for church buildings.

PROPOSED NEW BUILDINGS IN LONDON AND SUBURBS.

SCHOOL in West District-road, Ashford, Staines. Architect, Education Committee, Middlesex Guildhall, Westminster, S.W.

Iron building, Zoar Chapel, Staines-road, Hounslow. Rev. James E. Flegg.

Proposed new buildings for the Institution of Civil Engineers at corner of Great George-street and Princes-street, S.W.

Ten double tenements, Artichoke-alley, Richmond. Mr. J. H. Brierley, Surveyor to Town Council.

Rebuilding Carpenters' Arms public-house, James-street, W.

Villas, School-lane, Hounslow. Mr. Thos. Hiscock, builder, 181, High-street, Hounslow.

Two houses, Arden-road, Finchley, Mr. C. W. Scott, builder, Church End Station, Finchley.

Buildings in Great Chapel-street, Victoria, S.W. Messrs. Redpath, Brown, & Co., Ltd., contractors, East Greenwich, S.E.

Hounslow.—Temporary iron building, Mr. H. Osborne Grice; workshop, Ivy-road, and alterations to Lord Palmerston public-house, Staines-road, Messrs. Nowell Parr & Kates; store-shed, Wellington-road, Messrs. Roper, Son, & Chapman; six villas, Kilmorey-gardens, Isleworth, Mr. H. J. Moyle; three houses, Talbot-road, Isleworth, Mr. A. Harris.

Shop, etc., Woodstock-street, W. Messrs. F. & H. F. Higgs, builders, Station Works, Loughborough Junction.

Finchley.—Six houses, Stanhope-avenue, Messrs. Glanville & Co.; five shops with dwelling-houses, Cornwall House Estate, Mr. F. C. Carter; ten houses, Cornwall-avenue, Mr. F. Wood.

Staines.—Five shops, Links Estate, Mr. C. W. Calcot; two shops, Woodthorpe-road, Ashford, Mr. A. Francis.

Premises in Long Acre, W.C., for Avon India-rubber Company, Ltd. Messrs. Prestige & Co., builders, Pimlico, S.W.

Buildings in Little St. Andrew-street and Great White Lion-street, W.C. Messrs. C. Gude & Son, Ltd., housebreaker, 177, Dalston-lane, Hackney.

Factory and spirit-room at Walthamstow for Micanite and Insulator Company, Blackhorse-lane.

Twelve houses, Beech Hall-road, Walthamstow. Mr. O. H. Watling, builder, 1, Handsworth-avenue, Walthamstow.

Bakehouse in Forest-road, Walthamstow. Mr. J. J. Kelf, architect, 213, Hoe-street, Walthamstow.

Walthamstow.—Five houses, Mr. F. B. E. Amos; studio, Westbury-road, Mr. R. A. Briggs; addition to school, Raglan-road, Mr. S. J. Moulds; dairy and stables, Forest-road, Mr. W. A. Lewis; one house, Worcester-road, Mr. F. Mayhew.

Erith—Forty-eight houses, Hurst-road, Mr. W. Egerton, architect, 12, Queen's-road, Erith; workshop, Pier-road, Messrs. J. T. Jarvis & Sons.

Extensions of Livingstone Cottage Hospital, Dartford.

Public offices, Carshalton (1,640*l.*). Mr. John Day, builder, Pound-street, Carshalton.

Mortuary at East Barnet. Mr. H. York, Surveyor, East Barnet Valley Urban District Council.

Shop and offices, Addenham-road, Watford. Mr. J. Rodwell, builder, Bushey Hall-road, New Bushey, Watford.

Watford.—Conversion of Nos. 160 to 168, Whippendell-road into shops, Mr. C. Brightman; two houses, Sussex-road, Mr. Sutton; two houses, Hempstead-road, Messrs. Clark Brothers; two villas, Kingsfield-road, Mr. J. Freshwater; two houses, Field-road, Mrs. Wright; five cottages, Judge-street, Mr. J. Russell.

Buildings in Oxford-street, Wardour-street, and Berwick-street, W. Mr. Walter Wallis, builder, 207 and 209, Balham High-road, S.W.

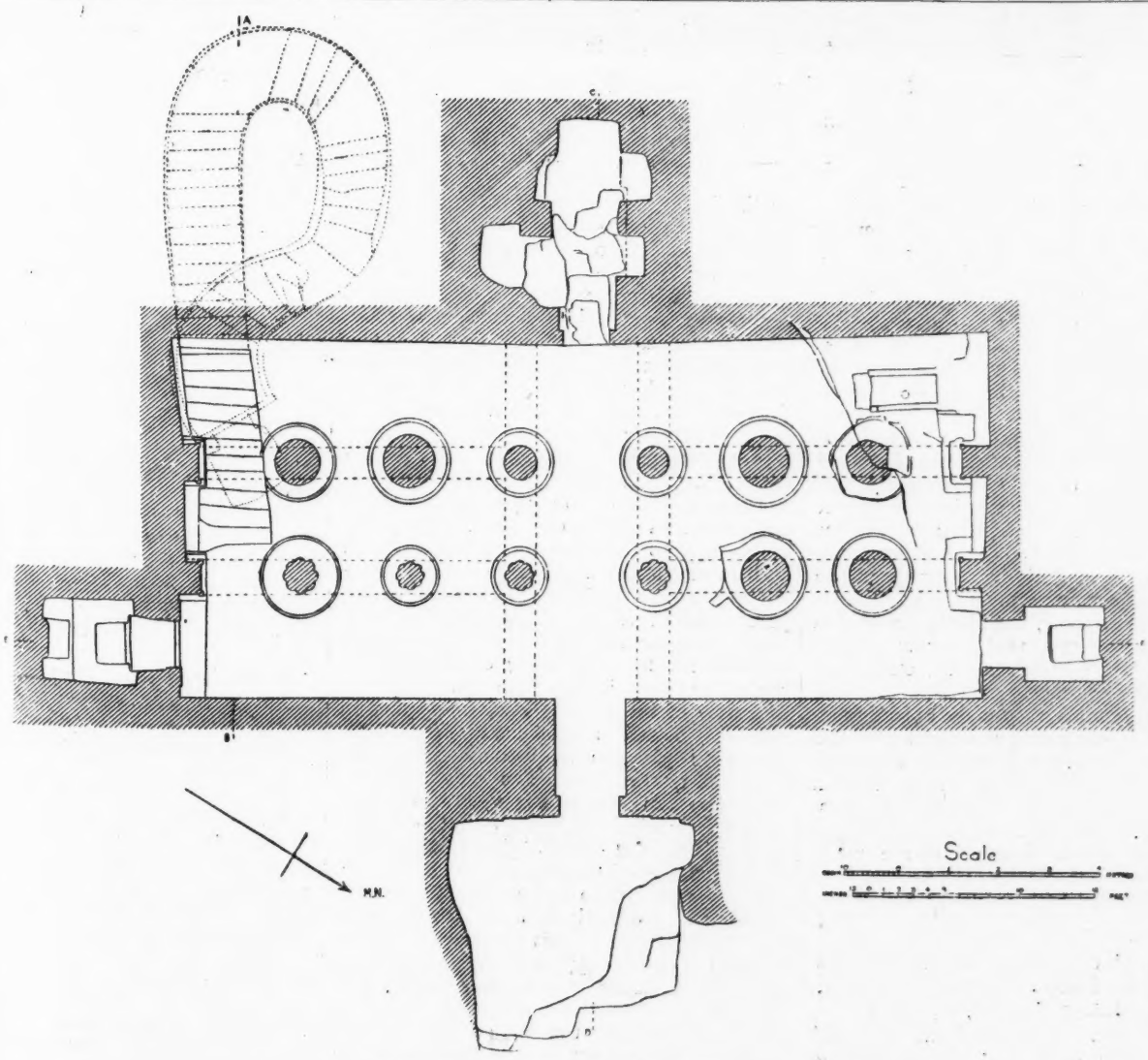
Two proposed churches, Hanwell. Rev. W. M. Farquhar, rector.

Additions to St. Albans Church, Teddington. Rev. A. M. Cazalet, vicar.

Books.

The Rock-tombs of El Amarna: Part V.—Smaller Tombs and Boundary Stelæ. By N. DE G. DAVIES. (London: Egypt Exploration Fund. 1908.)

THIS is the seventeenth memoir of the *Archæological Survey of Egypt*, edited by Mr. F. Ll. Griffith. The larger portion of the memoir deals with inscriptions and historical data as to personages represented or referred to; but there are some interesting architectural details. Among the tombs that numbered 16 is mentioned as one which, if completed, would have ranked as one of the finest rock-hewn burial places in Egypt. The approach to it is unfinished, but the principal hall, 53 ft. long, 29 ft. wide, and 14 ft. high, is complete in its main architectural features. There are twelve columns, of which however only six have been completed, the others (the thick ones in the plan) being only roughed out in the general



Plan of Tomb No. 16, El Amarna.
(From the *Archæological Survey of Egypt.*)

View in Tomb No. 16, *El Amarna.*

(From the *Archæological Survey of Egypt.*)

proportions required before working them into lotus-bud and reeded columns. An unusual feature is the introduction of three ribs on each of the eight stems of the completed columns, thus dividing them into four. We reproduce the plan of this hall on a smaller scale, and also a photographic view of it, with the light entering from the entrance on the right. On the left of the view is a portion of one of the thicker roughed-out columns.

Nothing is said in the text as to the probable date of this and the other tombs described and illustrated. It may be observed that the plan as drawn does not in one respect correspond with the section as drawn nor with the photographic view; the two small centre columns in the second row from the entrance are shown on the plan as circular, while it would appear, both from the section and the photograph, that they are really divided up into reedings like the other four of the smaller columns.

The text contains a great deal of information, but it is a pity that it is not better and more systematically arranged in a literary sense. The remarks seem to be thrown together anyhow, interspersed with needless reflections, so that it is somewhat difficult to find out which illustrations are really under discussion. There is a want of consecutive order both in plates and letterpress.

The Trees of Commerce. By W. STEVENSON. Revised edition. (London: William Rider & Son, Ltd. 1908.)

SINCE its first appearance in 1894 this excellent little book has passed through several editions, and in its present form has been brought well up-to-date, particularly by the inclusion of notes upon some special varieties of hardwood. The basis of the work was a series of articles written by the author for the *Timber Trades Journal* with additional matter, making the book a really serviceable as well as interesting *résumé* of the scattered literature on the subject. While the main object of the author has evidently been to comply with the needs of the practical man, the botanical aspect of timber has been sufficiently considered, and in most cases the French, German, and other foreign names of the various trees are given in addition to the trade nicknames bestowed upon certain varieties of timber. The latter are sometimes rather confusing to the user, and even timber merchants are not invariably able to satisfy inquirers as to the precise origin of woods described in that way. Another feature accounting in large measure for the popularity of Mr. Stevenson's handbook is that the characteristics and uses of the various kinds of timber in different countries are clearly set forth. We have pleasure in recommending this book to our readers. The only improvements we can suggest are a series of illustrations showing the trees and the timber they yield, and tables giving data concerning the physical properties of the latter. There would not be much difficulty in providing the illustrations, and by adding to the results of tests in this country those more recently obtained by Government investigations in Australia, the United States, and elsewhere, a valuable collection of facts might be brought together which, we feel certain, would be appreciated by all who are professionally and commercially interested in the subject.

Workmen's Compensation Cases. Vol. IX. Being reports of cases decided under the Workmen's Compensation Acts during the period September, 1906, to August, 1907. Edited by the late R. M. MINTON-SENHOUSE, Barrister-at-Law, and His Honour JUDGE RUEGG, K.C., and F. J. COLIMAN, Barrister-at-Law. (London: Butterworth & Co. 1908.)

THIS is a continuation of the reports of cases under the Workmen's Compensation Acts which have proved of service both to members of the legal profession and to laymen. This ninth volume will practically conclude the cases under the repealed Acts and greater interest will attach to the next volume, which is to appear under the names of the surviving editors, and which will embrace cases decided under the new Act of 1906 which came into force July 1 last.

Many questions of principle decided under the old Acts are however applicable under the new Act, and thus there is every reason to believe that the present volume will prove as useful as its predecessors. We notice that although there are two tables of cases—one containing the names of cases reported in this volume, the other containing the names of cases reported in all the volumes hitherto published—the same principle has not been adopted in connexion with the Index. There is only one Index which comprises the subject matter of the cases reported in all the volumes. We venture to suggest to the present Editors that reference will be facilitated if an Index containing the subject matter of the cases in each volume as it appears be also appended.

London Laws and By-laws. By CHARLES WILLIAM TAGG and LOUIS OLIVER GLENISTER, with a Preface by LAURENCE GOMME. (London: Frederick Tarrant & Co. 1908.)

THIS work consists of a collection of those statutes and by-laws which relate to local government in the Metropolis, but not of those relating exclusively to the City of London. The statutes, which are arranged in chronological order, commence with Michael Angelo Taylor's Act, 1817, and are brought up to date, being noted as to repeal, etc.; and such a collection of statutes and by-laws printed on thin paper, and therefore contained in a small space, is likely to prove useful to those concerned with local Government, especially as some of the principal statutes, being local and personal Acts, are not easy of access to the general public.

In this connexion we may, however, suggest that in printing these statutes the well-known distinction between public Acts of Parliament and those which are local or private Acts should have been retained. Thus the chapters of the Public and General Acts should be given in ordinary figures whilst those of the local and personal Acts should be printed in Roman numerals. The volume contains a Preface by Mr. Gomme, the clerk to the London County Council; an interesting Introduction by the Authors; and a copious Index. The Report of the Commissioners under the London Government Act, 1899, also finds a place in the text.

Machine Design, Construction, and Drawing. By HENRY J. SPOONER, M.I.Mech.E., A.M.Inst.C.E., etc., Director and Professor of Mechanical and Civil Engineering in the Polytechnic School of Engineering, Regent-street, London. With eighty-six tables and over 1,400 figures. (Longmans, Green, & Co. 1908.)

PROBABLY the title of this book may not be particularly attractive to architects and others chiefly interested in building construction, but it really contains a good deal of matter directly connected with that department of practice. The first five chapters are devoted to drawing instruments and materials and their use in the preparation of working drawings. Four later chapters give much useful information relative to "Riveted Joints," "Bolts, Nuts, Screws, etc.," "Pipes

and Pipe Connexions," and "Cotters and Cottered Joints"; and near the end of the volume will be found a comprehensive chapter on "Materials Used in Construction of Machines, Strength of Beams." These and a chapter on the design of "Steel and Iron Tanks," are the parts of the work appealing more particularly to our readers. To engineers and engineering students the treatise, of course, possesses a far higher value, which is due in no small measure to the admirable drawings reproduced as illustrations.

Decoration of Metal, Wood, Glass, etc. Edited by H. C. STANDAGE. (New York: John Wiley & Sons; London: Chapman & Hall. 1908.)

THIS book consists mainly of a collection of recipes. It describes methods by which the appearance of various materials and articles may be changed from that which they naturally possess. Giving to plaster casts a bronze coat, making new brass articles resemble antique bronzes, coating goose-feathers and pigeons'-wings with imitation gold and silver, dyeing horn to give it the appearance of tortoise-shell, treating new wooden furniture to make it appear old, these are some of the deplorable practices concerning which information is here given. It is sometimes desirable to possess knowledge of the methods by which imitative work is accomplished, and this is, therefore, a book which may with advantage be kept as a work of reference, even though some of the subject matter meets with unqualified disapproval. The book, moreover, describes methods of accomplishing work of a more legitimate character, such as tinning, galvanising, and enamelling metals, where the object is preservation and not deception or misapplied decoration. It also includes a useful chapter upon etching on glass and on metals.

BOOKS RECEIVED.

HYDRAULIC CALCULATOR FOR CIRCULAR PIPES. By R. O. Wynne-Roberts, M.Inst.C.E. (The St. Bride's Press. 5s.)

STAINED-GLASS TOURS IN FRANCE. By C. Hitchcock Sherrill. (John Lane. 6s.)

THE NATIONAL MONUMENT TO BE COMPLETED FOR THE SCOTTISH NATIONAL GALLERY. By William Mitchell, S.S.C. (Adam & Charles Black.)

Trade Catalogues.

"Anaglypta and Salamander Decorations" send us their album of Designs for 1908. As usual, these designs present a great deal of excellent decorative work. Among the diaper patterns for wall covering Nos. 680, 682, and 683 are very good: 680 especially, with its severe architectural lines. The catalogue shows also decorations for dividing up a ceiling into a large design on geometrical lines, leaving spaces which the decorator can fill up with his own special designs; skeleton plans of ceilings are given to show how these will work out.

The Tynecastle Company (Edinburgh and London) send us their new designs for ceilings, friezes, dados, etc., executed in their material. The conventional designs for friezes and running ornament are good; others, such as No. 2,224, are too naturalistic in detail and want clean quality of line in the curves. In using naturalistic sprays for ornament it is almost impossible to avoid this defect, which is one of the reasons why naturalistic ornament is unsatisfactory. The specimens of Tynecastle "wall-cloth" and "vellum" for wall coverings—the latter having an embossed metallic surface—are admirable for appearance and texture, and from that point of view we should like nothing better; but they are only suitable for houses in the middle of the country, where there is little dust or soot suspended. In town houses, and in London especially, they would be practically dirt-collectors; it would be impossible to keep them clean.

NEW SCHOOL, PLYMOUTH.—A new school is shortly to be opened at Prince Rock. Messrs. Thornely & Rook are the architects, and the estimate is 13,730*l*. Mr. A. N. Coles, of Plymouth, was the contractor.

Correspondence.

BUILDER'S LIABILITY IN WORKING FOR A TENANT.

SIR,—Would you be kind enough to inform us if it is legally necessary for a builder, for his security, to obtain a guarantee of indemnity from a tenant (who has done, and pays for, work to the premises which he, the tenant, rents), so that the builder will not be liable for paying the landlord or leaseholder for any old material cleared away in the course of the work, or for any deterioration of the value of the premises resulting from such work? As you are no doubt aware, it is not the custom for a builder to obtain such guarantee of indemnity.

CONTRACTOR.

*** It is hardly within our province to answer purely legal questions, and we fear we must therefore refer our correspondent to his lawyers. From a purely common-sense point of view, however, it would appear that if there is any reason to doubt the tenant being authorised to alter the premises, the safest course would be to ask him to produce the requisite authority from the owner of the premises. Such a course would protect both the tenant and the builder, and therefore be to their mutual advantage; if the owner is left without notice and his property is injured by the alterations, he would probably take any remedy he had against his tenant, if the latter is solvent, and only have recourse to the builder if the tenant were insolvent. In this latter eventuality an indemnity given by the tenant would be of little value, and thus the course we have indicated seems to be preferable.—ED.

METROPOLITAN ASYLUMS BOARD.

AT the fortnightly sitting of the Metropolitan Asylums Board on Saturday last week, an order was received from the Local Government Board authorising the provision of additional infirmary accommodation at Leavesden Asylum at a cost not exceeding 1,300*l*.

Central Stores.—The Works Committee reported that, as the result of a careful revision of the original scheme for the electric lighting in connexion with the building contract for the central stores, they had authorised the placing of an order at the sum of 540*l*. The architects reported that they had been able to effect savings in certain directions, with the result that the extras were not expected to increase the total cost of the work beyond the amount of the tender accepted by the Board, viz., 16,381*l*.

Laboratory.—The same Committee reported having authorised the placing of an order for the heating, ventilating, and hot-water supplies of the laboratory at the sum of 534*l*., and the work will be executed as a sub-contract under the main building contract, in which there was a provision of 475*l*.

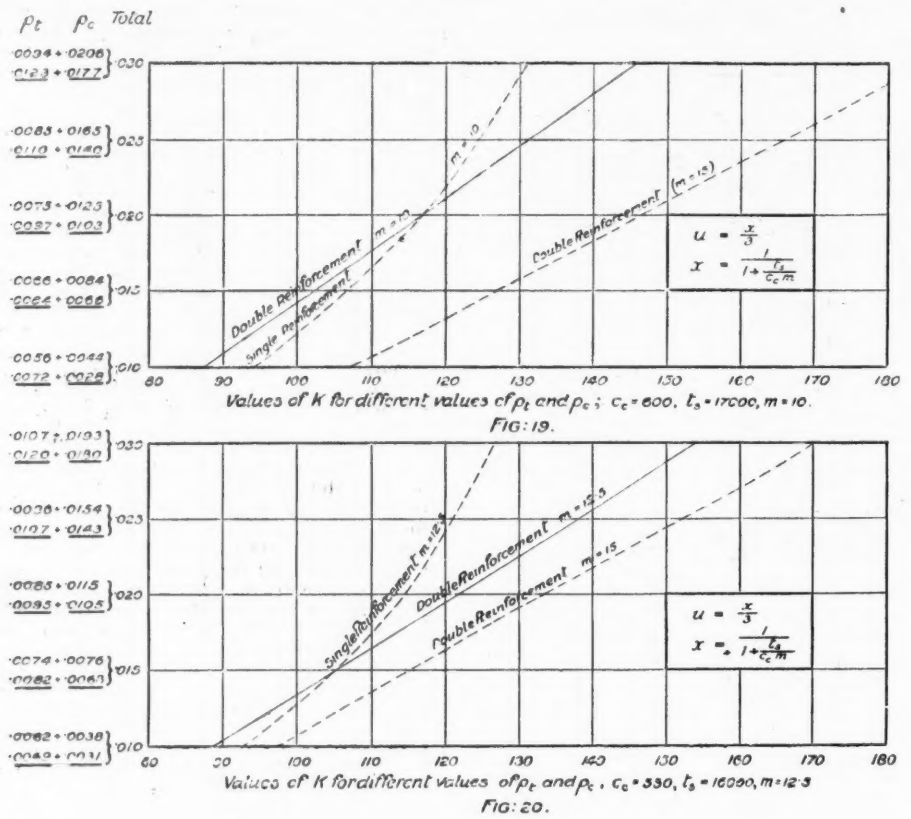
Builders' Accounts Under Contracts.—The Works Committee submitted a long statement with regard to the accountant's report on his final examination of the accounts in connexion with Messrs. W. Johnson & Co.'s contract for the erection of the Southern Hospital. The total amount of the contract was 176,050*l*., which included a provision of 5,000*l*. for general contingencies, and 2,400*l*. for extra foundations (if any). The total sum payable to the contractors (apart from the special claims which were dealt with in our report to the Board at their last meeting) was 185,388*l*. 15s. 8d., or a net increase over the contract sum of 9,338*l*. 15s. 8d. The principal items involving extras were 5,910*l*. (gross) for works carried out consequent upon engineering works, or at the suggestion of the Engineer-in-Chief, duly approved by the Board, 3,660*l*. (gross) for the laundry, etc.; 5,063*l*. (gross) for drainage, rainwater tank, overflow, and sump; and 2,792*l*. (gross) consequent on various orders of the Board. Against the extras must be set savings amounting to 1,342*l*. (gross) on the architects' own variations, and the provision for contingencies; the special contingent provision of 2,400*l*. for extra foundations was not needed for that purpose. The architects' own variations resulted in a saving of 1,342*l*. (gross) on the work contracted for, so that the additional cost of the whole work as executed by Messrs. Johnson was due to expenditure specially ordered. The amount sanctioned by the Local Government Board in respect of the structure, the drainage, and the water supplies was 195,112*l*.; exclusive of a general contingent provision of 10,000*l*. for the whole scheme of the erection of the hospital, which included, of course, a provision for the engineering and other works. The accountant found it necessary to make deductions from the final accounts to the extent of 1,577*l*. 0s. 9d. The Committee had gone into the details of these deductions, and had taken such actions as they deemed necessary in connexion therewih. Other points in connexion with these final accounts which the Committee thought should be brought to the Board's notice were:—(i.) The fact that the gross expenditure on the laundry, boiler-house, etc., has considerably exceeded the estimate. (ii.) The actual cost of the drainage and correlative work was 12,456*l*. (gross). The price given in the original bills was 8,538*l*. (gross). There was, however, a note in this section of the bills that the quantities (upon which, of course, the price was based) were approximate. As a matter of fact, it was subsequently found necessary to revise the drainage scheme, and the total cost includes the sum spent on enlarging the reservoir, which the Committee reported to the Board in October, 1904, would involve an estimated extra of 1,100*l*. The Committee did not report the probable cost of the whole work to the Board at the time, as they were not then in a position to say what it would be. (iii.) The central coal-store, a plan for which was approved by the Managers in October, 1905, at a cost estimated at 350*l*., cost 474*l*. 11s. 6d. (iv.) There are some items, approved by the Committee from time to time, which have amounted to a considerable sum, although they were not informed by the architects at the time of the probability that they would reach the costs actually incurred. (v.) They find there are some cases where the approximate expenditure has been considerably exceeded, or where consequential expenditure has been incurred, and they have obtained and dealt with explanations from the architects on such of those items as they considered called for action by them. The total of the extras reported by them to the Board from time to time, and which in each instance was based on the architects' estimate, was 8,930*l*. net. The total amount of the extras at completion was 10,916*l*. (gross), plus the two provisional sums of 5,000*l*. and 2,400*l*., making, with the provisional sums, 18,336*l*. In conclusion, the Committee stated that they had taken such action and issued such instructions as appeared to them advisable with a view to ensuring as far as possible the complete efficiency in the future of the regulations relating to the progress of works under contracts.

FERRO-CONCRETE BUILDINGS AND LOANS.

IN Wednesday's Parliamentary papers, Sir John Brunner asks the President of the Local Government Board whether, in view of the fact that several Government Departments have adopted the method of building in reinforced concrete, with a resultant large economy and no loss in efficiency, he proposes to persist in requiring from local authorities a shorter term for the repayment of loans for buildings in reinforced concrete than for buildings in the old-fashioned method.

Mr. John Burns replies as follows:—"As I have stated before, I am advised that it is doubtful whether ferro-concrete is a suitable material for permanent structural works under all conditions, and that there is need for caution in dealing with it. Examples have been brought under my notice of the failure of works constructed of this material. There has not been sufficient experience in connexion with this matter to enable me to arrive at a definite conclusion with regard to the economy and efficiency of buildings constructed with ferro-concrete, and I am still not satisfied that the periods allowed for the repayment of loans for work so constructed can properly be extended."

EXTENSION OF GENERAL POST-OFFICE, EDINBURGH.—This extension is now taking shape on the east side of the present post-office, to which it will form an important addition. The extension has been planned to relieve the letter and parcel sorting departments, as well as the storage for the telegraph engineers. The area of the site is 1,520 super. yds., and is almost entirely covered by buildings which consist of seven stories, and will rise to a general level of 99 ft. above the Low Calton-street pavement. The elevation to Low Calton, Waverley Station, and the return at the Inland Revenue offices are faced with free-stone from Doddington Hill Quarry, Northumberland. The heating is to be on the low-pressure hot-water system, and the illuminant electric light. The building is being erected from designs by Mr. W. T. Oldrieve, F.R.I.B.A., F.S.I., H.M. Principal Architect for Scotland, under whose supervision the work is being carried out. The contractors for the foundations were Messrs. A. Waddell & Sons, Edinburgh, and for the superstructure Messrs. A. Colville & Co., Edinburgh. The structural steelwork is being executed by Messrs. Alexander Finlay & Co., of Motherwell. The clerk of works is Mr. James Reid.



Values of K for different values of ρ_t and ρ_c; c_c = 600, t_s = 17000, m = 10.

FIG: 19.

Values of K for different values of ρ_t and ρ_c, c_c = 330, t_s = 16090, m = 12·3

FIG: 20.

The Student's Column.

REINFORCED CONCRETE BEAM FORMULÆ.—XV.

RECTANGULAR BEAMS WITH DOUBLE REINFORCEMENT (*concluded*).

(56.) *Reduced Formula for Moment of Resistance.*—Formulæ (37) to (39a) can be reduced to the simple form given in Section (45) for beams with single reinforcement by employing the symbol K to represent all the factors except bh^2 for any given qualities of concrete and steel, and for any given proportions of reinforcement.

The reduced formula to which we refer is

$$M_r = bh^2K \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (9)$$

(57.) *Tables and Diagrams for Values of K.*—In order to make formula (9) applicable to beams with double reinforcement, it is necessary to have tables or diagrams giving values of K for different qualities of concrete and steel, different proportions of reinforcement, and different positions of the compression reinforcement.

But in practical work where one or two standard qualities of material are employed, and where the depth of the compression reinforcement bears a constant ratio to the depth of the neutral axis or to the effective depth of the beam, a small number of tables or diagrams will suffice for all ordinary purposes, and in exceptional cases the proportions of beams can be calculated by formulæ (29 to (39a).

As examples, we give in Figs. 19 to 22 values of K for four qualities of concrete and steel, and for ratios of total reinforcement up to 0·03.

These diagrams are based upon the relative position x of the neutral axis as determined by formula (29) and the relative depth of the compression reinforcement represented by the expression $u = \frac{x}{3}$.

Consequently, the position of the neutral axis is the same in every instance as that given for single reinforcement by formula (1), and the centre of compression in the steel coincides with the centre of compression in the concrete, thereby permitting the use of formulæ (37a) to (39a) in place of formulæ (37) to (39).

The proportions of the reinforcement have been calculated by formulæ (34) and (35).

Each diagram contains a curve giving values of K for the relative proportions of tension, compression, and total reinforcement shown by the left-hand scale. Intermediate values of ρ_t and ρ_c can be obtained with sufficient accuracy by interpolation.

For the purpose of enabling ready comparison to be made between single and double reinforcement, curves in broken lines are drawn showing values of K for single reinforcement, the proportionate amount of steel so applied being equal to the sum of the steel in tension and compression for double reinforcement. These curves indicate very clearly that single reinforcement is less economical than double reinforcement for the higher values of ρ and K.

The curves for K with values of m, as stated below the diagrams, show that for concrete and steel working under relatively high stresses the values of K are smaller than those for concrete and steel working under relatively low stresses.

In order that the influence of the factor m may be clearly demonstrated, we give in Figs. 19, 20, and 22, a second series of curves for K based upon the value $m = 15$, which applies also to the curve in Fig. 21. The proportions of ρ_t and ρ_c for these additional curves are represented in the marginal scale by underlined figures, intermediate values being obtainable by interpolation. Comparison of the curves for $m = 15$ with those for $m = 10$, $m = 12{\cdot}5$, and $m = 20$, will serve to indicate the superiority of concrete and steel capable of withstanding relatively high stresses when the neutral axis is in a favourable position.

For materials where the value of m is small, the depth of the neutral axis could be adjusted by varying the proportions of the tension and compression reinforcement, but owing to the proportionate reduction of stress in the tension reinforcement, as determined by formula (31), it does not necessarily follow that economy would be secured by the adoption of such an alternative.

Figs. 23 and 24, calculated for $u = 0{\cdot}1$, contain curves giving values of K for different proportionate amounts of tension and compression reinforcement and for two qualities of concrete and steel. The scale at the left hand of each diagram refers to the tension reinforcement only, the total ratio of reinforcement being the sum of the tension and compression ratios at any level on the scale. Thus, in Fig. 24, for $K = 151{\cdot}4$, $\rho_c = {\cdot}5\rho_t$, the total ratio of reinforcement is $({\cdot}02 + {\cdot}01) = {\cdot}03$.

The curves passing from right to left give values of x for the same relative proportions of tension and compression reinforcement, the scale for x being along the top of the diagram.

(58.) *Examples Showing the Use of the Diagrams—*

Example (26).—Find the safe moment of resistance and sectional areas of tension and compression reinforcement for a beam where $b = 10$ in., $h = 18$ in., $c_c = 500$, $t_s = 15{,}000$, $m = 15$, and $(\rho_t + \rho_c) = 0{\cdot}02$, the proportionate depth of the reinforcement to be $u = \frac{x}{3}$.

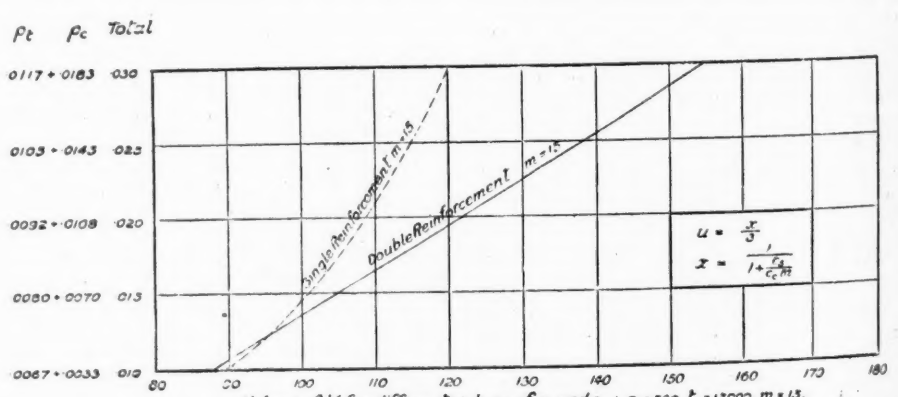
By Fig. 21, for $\rho_t + \rho_c = 0{\cdot}02$, $K = 122$, $\rho_t = {\cdot}0092$, $\rho_c = {\cdot}0108$.

Then by (9)

$M_r = 10 \times 18^2 \times 122 = 395{,}280$ inch-pounds.

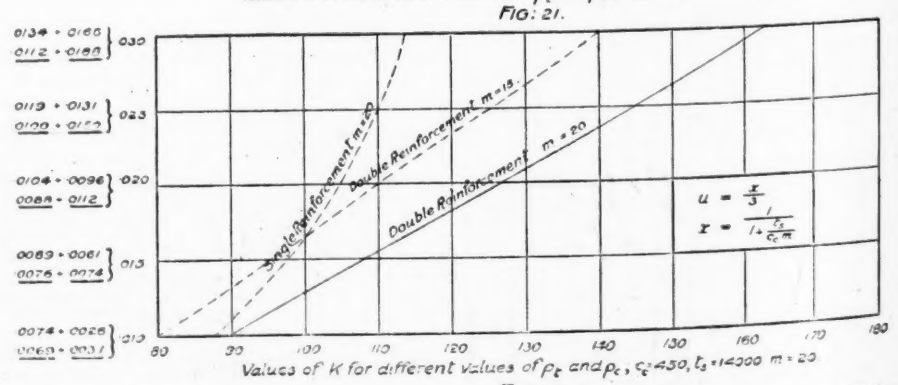
The areas of reinforcement are

Tension, ·0092 × 180 = 1·656 sq. in.
Compression, ·0108 × 180 = 1·944 sq. in.



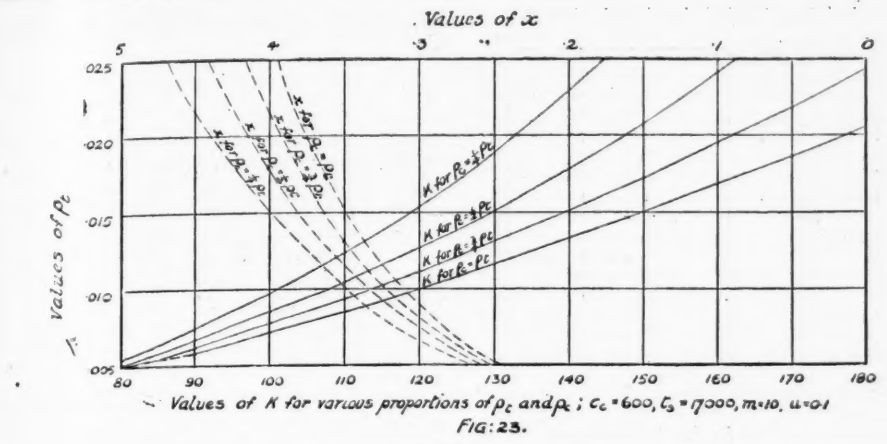
Values of K for different values of ρ_t and ρ_c; c_c = 500, t_s = 13000, m = 13.

FIG: 21.



Values of K for different values of ρ_t and ρ_c, c_c = 450, t_s = 14000 m = 20

FIG: 22.



Values of K for various proportions of ρ_t and ρ_c; $c_c = 600$, $c_t = 17000$, $m = 10$, $u = 0.1$

FIG. 23.

Note that by the curve for single reinforcement in Fig. 21 the area of steel would have to be increased by more than 50 per cent. for the same moment of resistance.

Example (27).—A beam measuring $b = 10$ in., $h = 15$, has to withstand the bending moment of 340,000 inch-pounds.

Find suitable proportions for the tension and compression reinforcement for the permissible stresses $c_c = 500$, and $t_t = 15000$, and $m = 15$.

By (9)

$$K = \frac{340{,}000}{10 \times 15^2} = 151{\cdot}1$$

By Fig. 21 $\left(\text{where } u = \frac{x}{3}\right)$, taking $K = 152$, we find on the left-hand scale $(\rho_t + \rho_c) = 0{\cdot}029$, and obtain by interpolation $\rho_t = 0{\cdot}0116$ and $\rho_c = 0{\cdot}0179$.

By Fig. 24 (where $u = 0{\cdot}1$), taking $K = 152$, we find by the left-hand scale $\rho_t = 0{\cdot}014$, $0{\cdot}0165$, and $0{\cdot}02025$, respectively, for the three lower curves, the corresponding values of compression reinforcement being $0{\cdot}014$, $0{\cdot}0125$, and $0{\cdot}010125$, giving $(\rho_t + \rho_c) = 0{\cdot}028$, $0{\cdot}029$, and $0{\cdot}030375$.

In this case the relations of ρ_t and ρ_c make very little difference in respect of economy, since the total ratio $(\rho_t + \rho_c)$ only varies by about $0{\cdot}002$, or $150 \times {\cdot}002 = 0{\cdot}3$ sq. in. of steel in the cross-section of the beam, the total area of reinforcement being about $150 \times {\cdot}03 = 4{\cdot}5$ sq. in.

It should be noted that, as shown by the broken line curve in Fig. 21, the use of single reinforcement would be out of the question for this beam.

Example (28).—A beam with the dimensions $b = 20$ in., $h = 30$ in., has to withstand the bending moment of 2,500,000 inch-pounds. Find the total area of reinforcement necessary for the permissible stresses stated below Figs. 19 to 22, and for $m = 15$ in each case.

By (9)

$$K = \frac{2{,}500{,}000}{20 \times 30^2} = 139$$

	$(\rho_t + \rho_c)$	Area of Steel.
By Fig. 19 ...	0·018 ...	600 × ·018 = 10·8 sq. in.
„ Fig. 20 ...	0·0213 ...	600 × ·0213 = 12·8 „
„ Fig. 21 ...	0·0251 ...	600 × ·0251 = 15·1 „
„ Fig. 22 ...	0·03 ...	600 × ·03 = 18·0 „

Example (29).—Find suitable dimensions and the total area of reinforcement for a beam capable of withstanding the bending moment of 1,400,000 inch-pounds, the total proportion of steel not to exceed 2 per cent. The qualities of the concrete and steel to be those indicated by the most economical results obtained from Figs. 19 to 22, taking $m = 15$ in each case. Make $b = \frac{2}{3}h$.

(a) By Fig. 19 we find opposite $(\rho_t + \rho_c) = 0{\cdot}02$, $K = 146$.

Therefore by (9)

$$bh^2 = \frac{1{,}400{,}000}{146} = 9{,}600$$

By (10)

$$b = \sqrt[3]{\cdot 4 \times 9600} = 16{\cdot}22 \text{ in.}$$

Whence $h = 16{\cdot}22 \times 1{\cdot}5 = 24{\cdot}33$ in.

The total area of steel is

$$16{\cdot}22 \times 24{\cdot}33 \times {\cdot}02 = 7{\cdot}9 \text{ sq. in.}$$

(b) By Fig. 20 we find opposite $(\rho_t + \rho_c) = 0{\cdot}02$, $K = 134$.

Therefore by (9)

$$bh^2 = \frac{1{,}400{,}000}{134} = 10{,}450$$

By (10)

$$b = \sqrt[3]{\cdot 4 \times 10450} = 16{\cdot}68 \text{ in.}$$

Whence $h = 16{\cdot}68 \times 1{\cdot}5 = 25{\cdot}02$ in.

The total area of steel is

$$16{\cdot}68 \times 25{\cdot}02 \times {\cdot}02 = 8{\cdot}35 \text{ sq. in.}$$

(c) By Fig. 21 we find opposite $(\rho_t + \rho_c) = 0{\cdot}02$, $K = 122$.

Therefore by (9)

$$bh^2 = \frac{1{,}400{,}000}{122} = 11{,}470$$

By (10)

$$b = \sqrt[3]{\cdot 4 \times 11470} = 17{\cdot}2 \text{ in.}$$

Whence $h = 17{\cdot}2 \times 1{\cdot}5 = 25{\cdot}8$ in.

The total area of steel is

$$17{\cdot}2 \times 25{\cdot}8 \times {\cdot}02 = 8{\cdot}88 \text{ sq. in.}$$

(d) By Fig. 22 we find opposite $(\rho_t + \rho_c) = 0{\cdot}02$, $K = 110$.

Therefore by (9)

$$bh^2 = \frac{1{,}400{,}000}{110} = 12{,}727$$

By (10)

$$b = \sqrt[3]{\cdot 4 \times 12727} = 17{\cdot}82 \text{ in.}$$

Whence $h = 17{\cdot}82 \times 1{\cdot}5 = 26{\cdot}73$ in.

The total area of steel is

$$17{\cdot}82 \times 26{\cdot}73 \times {\cdot}02 = {\cdot}51 \text{ sq. in.}$$

(59.) *Simple Working Rules.*—All the rules given for rectangular beams with single reinforcement in Section (48) and summarised in Table XV. can be applied to rectangular beams with double reinforcement by the aid of data such as are contained in Figs. 19 to 24.

General Building News.

NEW CHURCH, SWINDON.—A new church, known as All Saints, has been erected at Southbrook. The church has been built by Messrs. Spackman Brothers, from plans prepared by Mr. W. A. H. Masters. The walls are composed of kulm, and the roof is covered with Bridgwater tiles. The church is heated on the low-pressure hot-water system. This work has been carried out by Messrs. Bays & Co., Swindon.

METHODIST CHURCH, YARNSCOMBE.—Members of the United Methodist Church in the Barnstaple Circuit have opened a new church at Yarnscombe. The building, comprising a chapel and schoolroom, is of local dressed stone relieved with Marland brick, the windows being leaded. Accommodation will be provided for about eighty worshippers. The plans were prepared by Mr. S. Parsons, of Holsworthy.

PARISH CHURCH, GRINDLEFORD, DERBY.—A new parish church is to be erected at Grindleford. It is proposed at present only to erect the chancel and temporary nave, and to meet this cost a sum of 2,000*l.* is required. The designs have been prepared by Mr. G. R. Sutton, F.R.I.B.A., of Nottingham, and the church is estimated to cost about 8,000*l.*

CHURCH RESTORATION, HOWNAM, ROXBURGH.—The parish church of Hownam, which was destroyed by fire, has been rebuilt. Mr. James P. Alison, Hawick, was the architect, and the contractors for the various works were:—Plumber and slater work, Mrs. Spence, Jedburgh; heating, Messrs. J. Murray & Son, Hawick; plaster work, Mr. Robert Lauder, Jedburgh; painter work, Messrs. A. Hogarth & Sons, Kelso; lamps and chairs, Messrs. Jones & Willis, Birmingham.

ST. MARY'S CHURCH, NOTTINGHAM.—The vestry of this church in a report have recommended the erection of a chancel aisle on the south side for the accommodation of a new organ-chamber. The estimated cost of the aisle, according to the plans prepared by Mr. Hodgson Fowler, is 4,500*l.* The estimate of the organ-builders for the reconstruction and renovation of the instrument in the south aisle as designed is the sum of 2,500*l.*, making the total estimated cost of the complete scheme 7,000*l.*

WESLEYAN CHURCH, BISHOPSTEIGNTON, TEIGNMOUTH.—The foundation-stones of a new Wesleyan chapel were laid recently at Bishopsteignton. The new building will comprise a church, which will seat 125 adults, and minister's vestry and offices. The contract is in the hands of Messrs. Lamacraft & Sons, Dawlish, and the architects are Messrs. Wills & Sons, Derby. Including the site, the total cost will, it is expected, be about 1,000*l.*

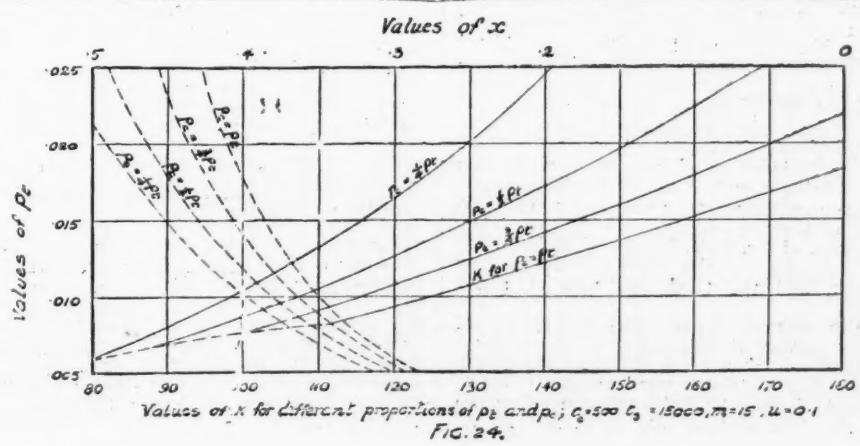
CHURCH IMPROVEMENTS, BARNSTAPLE.—It is proposed to carry out at the church of St. Mary Magdalene, Barnstaple, an improvement scheme which includes reflooring, heating, and lighting, and a complete scheme of decoration, recommended by Mr. John S. Lee, the architect. The estimate for the whole amounts to 1,725*l.*

CHURCH TOWER RESTORATION, SAXILBY.—The tower of St. Botolph's Church, Saxilby, has been restored at a total cost of 1,165*l.* Mr. H. Close, of Lincoln, undertook the work, the architect being Mr. W. Mortimer, also of Lincoln.

CHURCH RESTORATION, HULL.—The work of restoring Holy Trinity Church, Hull, has been completed. The restoration was carried out by Messrs. Thompson & Sons, of Peterborough, after Mr. J. S. Brodrick, the York Diocesan Surveyor, had consulted with Mr. Francis Fox. A foundation of concrete and girders was substituted for the decayed timbers under the tower. Concrete and blue Staffordshire bricks were used for the support of the nave piers.

LAMBETH TOWN HALL.—The new Lambeth Town Hall, which has been erected at a cost of 40,000*l.* on a site at the corner of Brixton-hill and Acre-lane, was opened on Wednesday by the Prince of Wales. The characteristic feature of the place is the tower over the main entrance. This tower rises to a height of 134 ft., and near the summit it has on the four corners sculptured figures representative of Art, Literature, Science, and Justice. The hall is in the English Renaissance style. The design was selected in an open competition, when 143 architects competed. The chosen design was that of Messrs. Warwick & Hall, of Gray's Inn.

COUNCIL SCHOOL, COLCHESTER.—The newly-erected East Ward Council school has now been opened. Messrs. Goodey & Cressall were the architects, and Mr. T. J. Ward the builder, the amount of his tender being 8,600*l.* The sum of 585*l.* has been allowed in the contract



Values of K for different proportions of ρ_t and ρ_c; $c_c = 500$ $c_t = 15000$, $m = 15$, $u = 0{\cdot}1$

FIG. 24.

as the cost of the installation of the ventilating and heating apparatus. The total estimated cost of the school, including furniture, is 10,000*l.*

PROPOSED SECONDARY SCHOOLS, SEAFORTH.—At Waterloo, on the 23rd ult., Mr. Edgar Dudley, F.S.I., held an inquiry into the application of the Waterloo-with-Seaforth District Council to the Local Government Board for sanction to appropriate as a site for a secondary school certain land in Cambridge-road, Seaforth. Mr. R. S. Cleaver, solicitor to the Council, stated that the estimated cost of the proposed school was 18,900*l.* Mr. F. Spencer Yates, the Council's Surveyor, also gave evidence.

NEW SCHOOL, LISBURN.—A new school has been erected in Seymour-street, Lisburn, at a cost of over 1,500*l.* It provides accommodation for 250 pupils. The building contract was placed with Mr. Jas. M'Nally, of Lisburn, who carried out the work from the plans of Mr. J. St. John Phillips, architect.

BUSINESS PREMISES, BELFAST.—Messrs. Hanna & Browne, cabinet makers, etc., have opened new premises fronting Arthur and Callender streets. The work was carried out by the following:—Plumbing and electric lighting, Messrs. John Dowling & Sons; hot-water heating system and fireproof iron doors, Messrs. Musgrave & Co.; leaded glasswork, Messrs. Ward & Partners; decorations and painting, Messrs. Geo. Morrow & Sons; electric lifts, Messrs. Medway's Safety Lift and Elevator Company; plate-glass windows, Messrs. Campbell Brothers. The designs and specifications were prepared by Mr. T. W. Henry, architect, Belfast, Messrs. Courtney & Co. being the contractors.

THE NEW ST. JAMES'S HALL.—The new St. James's Hall, in Great Portland-street, was opened on Saturday evening last. Exclusive of the orchestra, with its accommodation for sixty or seventy players, there will be arm-chairs for about 1,100 listeners. A gallery with rising tiers runs round three sides of the hall, and the ground floor slopes upward to the back. The hall proper fills the upper part of the building, the whole of the ground floor being used as a pianoforte show-room, while the basement is being prepared as a restaurant, with table-room for about 140 persons. The building was designed by Messrs. Joseph & Smithem, with advice as to the interior from Mr. A. Blomfield Jackson, and built by Messrs. Perry Brothers. It is of Portland stone and red brick, and has cost 100,000*l.*

ADELPHI-TERRACE HOUSE.—The work of converting the large block of buildings in the Adelphi (formerly known as the Caledonian Hotel) into flats and offices, and in future to be known as Adelphi-terrace House, has now been completed. The contract, which has extended over the last twelve months, has involved a cost (including the extension) of nearly 12,000*l.*, and has been carried out for Mr. G. J. Drummond under the supervision of Messrs. Hayward & Maynard, architects. The contractors for the main building were Messrs. Waller & Co., while the extension was carried out by Messrs. F. & H. F. Higgs (Loughborough Junction). The lifts were supplied by Messrs. Waygood & Co.

WORKMEN'S INSTITUTE, NEWBRIDGE. — The Celynen Collieries Workmen's Institute, which is erected near the main road between Newbridge and Pentwynmawr, has just been opened. The building contains on the ground floor standing-room, billiard-room, and a lending library. On the first floor is a hall which accommodates about 350 persons. The contractor was Mr. Charles F. Morgan, Newbridge, and the building has ben erected from plans drawn by Mr. R. L. Roberts, architect, Abercarn.

PUBLIC HALL, LLANIDLOES.—A public hall has been presented to this town by Mr. David Davies, M.P. The building, which is from the designs of Messrs. Shayler & Ridge, Oswestry, whose plans were placed first in a competition by Mr. W. S. Cross, London, comprises a market-hall, offices, refreshment and billiard-room, public reading-room and lending library, Council-chambers and Town Clerk's offices, temperance hotel, and caretaker's premises, with stables, motor garage, lavatories, etc. The total cost exceeds 6,000*l.*

NEW POST-OFFICE, RAMSGATE.—The post-office in High-street, Ramsgate, is to be rebuilt. The new building will have the lower portion of its frontage carried out in Portland stone, the upper part faced with Cheriton red facing-bricks, and the roof covered with green slates. The tender of Mr. T. T. Denne, of Walmer, has been accepted for the erection of the new building, and the total cost will be about 11,000*l.*

PUBLIC OFFICES, BARRY.—The first section of the new public offices—part of a scheme for a complete set of town buildings, which the Barry Urban District Council propose to erect, at a cost of about 25,000*l.*—was opened on the 22nd ult. The contract was let to Mr. D. W. Davies, builder, Cardiff, for 4,755*l.* The whole of the carving has been carried out by Mr. T. A. Jones, of Cardiff. The architects are Messrs. C. E. Hutchinson and E. Harding Payne, under whose supervision the works have been carried out, with the assistance of Mr. W. H. Sydenham, who has acted as clerk of works.

SOUTH SHIELDS MUNICIPAL BUILDINGS.—The new municipal buildings, which are being erected in South Shields at a cost of 45,000*l.*, have so far progressed as to enable the completion stone to be placed in position, and the ceremony of laying it took place on the 25th ult. The stone is situate at the top of the tower, which stands 140 ft. high. The contractors for the work are Messrs. McNeill & Sons, Manchester, Mr. E. E. Fetch being the architect.

BUSINESS PREMISES, HULL.—New shops and offices are being erected by the North-Eastern Railway Company in Victoria-square, Hull. The premises have been designed by Mr. W. Bell, F.R.I.B.A., the Company's architect, and the contractors for the work are Messrs. Quibell, Sons, & Greenwood, Ltd.

PROPOSED WORKHOUSE LAUNDRY, CARDIFF.—Mr. E. Seward, architect, has submitted revised plans to the Building Committee of the Cardiff Board of Guardians for the new laundry it is proposed to erect at the workhouse. The cost will be about 3,900*l.* If this scheme is eventually adopted, the Guardians will have to consider the question of increased accommodation, as several offices and bedrooms will be demolished in the erection of the new laundry.

TRADE NEWS.

MESSRS. CLARK & CO. have obtained the contract for the plastering throughout with their "Xelite" fire-resisting cement for Messrs. Benson's new bank, 102 and 103, Bishopsgate-street Within. They have also just completed the plastering with "Xelite" the Baptist church, Harrow.

Messrs. Waring & Gillow have erected pavilions at the Franco-British Exhibition for the following important firms of exhibitors:—Lipton's, Bovril, Atkinson's, Muratti's, and the *Daily Telegraph*. The architects for Muratti's are Messrs. Fulton, and for the *Daily Telegraph* Mr. Reginald Blomfield; in the other three cases Messrs. Waring & Gillow are the architects as well as the builders and decorators.

Messrs. A. Ransome & Co., engineers and iron founders (Newark and London), write that, in reference to their circular letter dated March 1, 1907, stating that all printed prices in their price-list dated January 1, 1907, were advanced 5 per cent., they have now the pleasure to inform the trade that this 5 per cent. is withdrawn. Their present prices, therefore, are as per their 1907 printed list.

Considerable additions are now being made to the Langham Hotel, Portland-place, W., and the whole of the sanitary fittings are being supplied by Messrs. Doulton & Co., who had previously fitted up the closets and carried out the drainage, etc. The work is being carried out under the direction of Mr. J. McVicar Anderson, and the contractors are Messrs. Walter Lawrence & Son, of Waltham Cross.

The Commercial Intelligence Branch of the Board of Trade have received from His Majesty's Consul-General at Antwerp a copy of a specification issued by the Antwerp Municipal authorities in connexion with a call for tenders for the construction of a bank for the "Société Française de Banque et de Dépôts," at the Place de Meir, Antwerp. The cost is estimated at 471.300 francs (about 18,852*l.*). A deposit of 20,000 francs (about 800*l.*) will be required to qualify any tender. Tenders, enclosed in sealed, registered envelopes, should reach Monsieur le Bourgmestre de la Ville d'Anvers, Hôtel de Ville, Antwerp, not later than May 11. The specification (*cahier des charges*) may be obtained from the Hôtel de Ville at a cost of 3 francs. A copy may be inspected by intending British contractors on application at the Commercial Intelligence Branch, Board of Trade, 73, Basinghall-street, London, E.C.

Messrs. D. G. Somerville & Co., reinforced concrete specialists, have at present in hand a large amount of work at the Franco-British Exhibition. The most important work consists of a large model bakery for Messrs. McVitie & Price. The whole of this building, which represents a Scotch manor-house, is constructed in steel-framing and reinforced concrete. The above firm have also secured the contract for the steelwork and reinforced concrete for a very large telephone exchange at Deptford, Mr. Leonard Stokes being the architect. They have further in hand the whole of the structural steelwork required for the new Carnegie Library at Dundee; structural steelwork for Sir William Treloar's Home for Crippled Children at Alton, Hants; and steelwork for the new Holloway Sanatorium at Virginia Water.

Stained Glass & Decoration.

ST. JOHN'S CHURCH, NEWCASTLE.—Two clergy stalls have been placed in this church in memory of the late vicar, the Rev. Henry Greene. The stalls, of oak, have been executed by Mr. Percy Appleby, Newcastle, to designs by Sir Charles Nicholson, Bart., London.

ST. JAMES'S CHURCH, EXETER.—New altar-steps have been placed in this church. Mr. J. H. Harvey, architect, of Bamfield House, Exeter, designed the steps, and the work was carried out by Mr. Herbert Read, of Exeter.

TRESHAM CHURCH.—The chancel of this church has been redecorated according to designs by Mr. A. S. Hartrick. The carving was executed by Mrs. A. L. Bowley, of Reading College.

TRURO CATHEDRAL.—It is proposed to erect in the choir of this cathedral canopied stalls as a memorial of the late Bishop Wilkinson. The total cost is estimated by Mr. F. L. Pearson, Consulting Architect to the Dean and Chapter, at 2,500*l.*

Appointment.

OXFORD.—Mr. C. Wontner Smith, one of the Hon. Secretaries of the Architectural Association, has been appointed Diocesan Surveyor to the Archdeaconry of Oxford.

Sanitary and Engineering News.

CRIEFF SEWAGE PURIFICATION WORKS.—Work has now been begun on the Crieff Sewage Purification Works. The engineer of the scheme is Mr. G. Thomson, Glasgow. Mr. Kinniburgh, Glasgow, being the contractor.

SEWERAGE SCHEME, COPTHORNE.—Mr. E. A. Sandford Fawcett, M.Inst.C.E., recently held an inquiry at Crawley Down, on behalf of the Local Government Board, into the application of the East Grinstead Rural Council for leave to borrow 16,000*l.* for the purposes of sewerage and sewage disposal at Crawley Down and Copthorne. Mr. G. Thomson, Glasgow, Mr. Kinniburgh, Glasgow, being the contractor.

PROPOSED SEWERAGE SCHEME, WHITEHEAD.—Mr. P. C. Cowan, M.Inst.C.E., Engineering Inspector to the Local Government Board, recently held an inquiry at Whitehead into the application of the Larne Rural Council for a loan of 1,000*l.* for the improvement of the Whitehead sewerage system. Mr. J. A. Hanna, C.E., is the author of the scheme.

Foreign.

GERMANY.—A third hospital is in course of erection in Munich, from the designs of Richard Schachner. It will eventually accommodate 1,300 patients, but at present only 500 patients will be provided for, at a cost of 7,340,000 marks.——Two hundred and ninety-two designs were submitted in the competition opened for a municipal savings bank in Flinsberg. The first premium of 1,500 marks was awarded to Hermann Fleck, of Berlin-Wilmersdorf.——Eighty-one designs were entered in the competition for elevations to two houses in the Ring, Breslau. The first premium of 1,000 marks was awarded to Messrs. Heger & Franke, of Breslau.——In the competition for designs for a synagogue and a religious school for the Jews in Berlin, the premiums were equally divided among E. Hessel, of Berlin, Leonhardt & Schmidt, of Frankfort, and Franke, of Breslau, who each received 3,333 marks.

ITALY.—Out of the four projects submitted to the Royal Commission for Internal Navigation for connecting Rome with the sea, that drawn up by the Society of Civil Engineers has been selected. It is open, however, to many objections. According to this project the bed of the Tiber would be used as the waterway, with the sharpest curves corrected, and the channel narrowed by means of lateral stages. The Commission selected the project that would be the most economical in construction and in upkeep, but even so the cost is estimated at 30 million francs, and this narrowing of the river bed would prove a fruitful source of inundations and other evils.——The well-known Italian engineer, Cesare Cipoletti, has recently died, at the age of 75. He conducted many important hydraulic works in his country, amongst others the Villoresi canal and mole, and wrote several valuable works on hydraulics.

THE PALACE OF PEACE.—According to the *Times* correspondent at the Hague, the Committee of the Palace of Peace has accepted a

tender for the foundations and basement of the Palace for 112,500 florins (9,375*l.*).

CHINA.—After the Chino-Japanese War of 1894-95, the Chinese railways were greatly extended, so that now, including the lines in Manchuria, there are 5,000 kilometres of railway in China. About 1,800 kilometres more are in course of construction, while a further 5,000 kilometres will be added to the main lines. Russia holds the northern half of the Manchurian line, Japan the southern half, while the North Pekin line is under Chinese control. Germany owns the system in Shantung and the extension to Tien-sin. French and Belgian capital built the line from Peking to Hang-chou, whose extension to Canton will be carried out by China. English capital and interest built the Shanghai-Nanking line, which is to be continued to the borders of Shantung. China is endeavouring to free herself from foreign influence, and is herself constructing the Yang-tse line north of Nanking and the Ningpo-Soo-choo branch. She is gaining experience in unpleasant ways. A few months ago, during the construction of the Peking-Kalgan line, on which works no foreign assistance was sought, a tunnel fell in and buried 180 workmen.

Miscellaneous.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Mr. R. W. Coventry Dick, architect, has removed his offices from 18, Coleman-street to 72, Finsbury-pavement, E.C.

TWO SCOTTISH CASTLES BURNED.—A fire, on April 15, destroyed Monzie Castle, near Crieff, co. Perth, the seat of Mr. Magill Crichton; the loss is estimated at about 25,000*l.*, though some of the valuable contents were saved. The castle was originally built in 1634, and is famed for its plantation of old larch trees; the modern portion was added about 100 years ago. By a similar disaster on April 23, the greater part of Mr. R. E. Findlay's seat, Boturich Castle, which stands on the east shore of Loch Lomond, one mile distant from Balloch, was consumed; the fire brigade, aided by residents in the neighbourhood, rescued the contents.

LIVERPOOL GEOLOGICAL SOCIETY.—At a recent meeting of this Society, held at the Royal Institution, the Vice-President, Mr. J. Lomas, F.G.S., exhibited and described an antler and a perforated worked stone found in the excavations for a new dock at Vittoria Wharf, Birkenhead. They occurred in a deposit of silt resting on boulder clay, and about 15 ft. below the surface. The antler has been artificially sharpened to serve as an instrument for excavation, and the marks of the tools employed are plainly visible. The stone discovered in the course of the same excavations is composed of micaceous sandstone, and must have come from a great distance, for no local rocks bear any resemblance to it. It is circular in form, about 5 in. in diameter, and the rim has been polished to a sharp cutting edge. It is perforated in the centre with a hole about 1½ in. in diameter, and this no doubt formerly served for the insertion of a wooden handle. The Society cordially thanked Mr. A. G. Lyster, the Engineer to the Mersey Docks and Harbour Board, for the interest he has shown in preserving these interesting relics, and for his kindness in allowing them to be exhibited at the meeting.

WATER SUPPLY TO TENANTS.—The London County Council is circularising the local authorities reminding them of the new powers with respect to the water supply to tenement houses. Under these new powers, a tenement house is deemed to be "a house without a proper water supply," unless there is a sufficient supply of water on each story in occupation.

STREET IMPROVEMENT, DEPTFORD.—Intimation has been sent to the Camberwell Borough Council of the intention of the London County Council to apply to Parliament for the revival of the powers for the compulsory purchase of land for the purpose of widening Queen's-road in that portion in the Borough of Deptford.

PROPOSED MOTOR GARAGE, ISLINGTON.—In connexion with the question of repairing the paving of Barnsbury-terrace North, Islington, it was reported by the Works Committee of the Islington Borough Council on Friday last week that the owner of Nos. 9, 10, 11, 12, and 13, Barnsbury-terrace, and of the lawn-tennis ground adjoining, had informed them that he proposed pulling down his houses and erecting a large motor garage, covering the whole of the site, at an estimated cost of between 4,000*l.* and 5,000*l.*

ACCIDENT AT THE FRANCO-BRITISH EXHIBITION.—While engaged in painting the inside of the roof of one of the buildings at the Franco-British Exhibition at Shepherd's Bush, a painter named William Ripley, aged 38, of St. Dunstan's-road, fell from a scaffolding and was killed. The inquest was held on the 24th ult. at Hammersmith by Mr. C. Luxmoore Drew. Thomas Watson, a fellow-workman, said that Ripley and he were standing on the pole on which the scaffold was placed in order to move a plank nearer to their work, when the pole gave way, and Ripley fell head first to the ground. Examined by Mr. Leonard Ward, on behalf of the Home Office, witness said that the pole was not long enough to be fitted properly into the stanchions. Had the pole been a foot longer it could have been placed firmly betwen the stanchions. Charles Thompson, a scaffolder, said the poles were ready cut for use. One end was put into the lattice-work, and the other end was lashed to the stanchion. He could not account for the accident, as he thought the scaffold was perfectly safe. Arthur Henry Mann, foreman painter, of Walthamstow, said he could not understand how the accident occurred, unless the scaffold had been tampered with. Replying to Mr. Ward, witness said if he was doing the work again he should use a longer pole, having regard to the accident. Answering Mr. Gardiner, on behalf of the contractor, witness said it was necessary to move the plank on which the painters were at work according to where they wanted to paint. The Coroner said there was a suggestion that the scaffold had been tampered with, and as there was no evidence on that point the inquiry might have to be adjourned. The witness Mann, recalled, said he had no reason to believe anyone wilfully interfered with the lashing. The Coroner said it appeared to him that if both ends had been lashed the accident would not have happened. Mr. Leonard Ward, His Majesty's Inspector, in the witness-box, said he did not think there could have been any interference with the scaffold. He thought the act of Ripley in stooping to lift the plank caused the pole to slip sideways towards the wall. A verdict of accidental death was returned.—*Morning Post.*

YORKSHIRE MASTER BUILDERS.—The Yorkshire Federation of Building Trade Employers met, on the 23rd ult., at Selby. The President, Mr. J. Biggin, was in the chair. It was reported that several associations had written to the Home Secretary calling his attention to matters affecting the trade arising out of the recommendations of the Committee appointed to inquire into the dangers of building operations. It was also reported that the National Federation were endeavouring to arrange for an interview with the Home Secretary. A letter was read from the Home Secretary stating that, although builders might occupy premises which for certain purposes came under the provisions of the Factory Acts, it would not be necessary for them to furnish returns of compensation arising from accidents under sect. 12 of the Workmen's Compensation Act, 1906. Mr. James Townsley, of Hull, read a paper on "The Evils of Trade Competition." He said the building trade suffered much because of the reckless speculation and competition of some of those engaged in it. Many contracts were, he thought, made unremunerative through the tendering of men who lacked the necessary business training and technical knowledge. The evil was aggravated by the readiness with which the lowest estimates were accepted, without regard to the status or past achievements of the competitors; and the vacillating and compromising ways of some architects was also to blame. A rigid specification, strictly demanded and faithfully adhered to, was in the best interests of the trade generally.—An invitation from Halifax to hold the next meeting there was accepted. The company were then shown over the restoration work at Selby Abbey by Mr. T. S. Ullathorne, contractor, and Mr. R. Searle, clerk of the works, and were subsequently entertained at tea by Mr. Ullathorne.

MANCHESTER CORPORATION BILL.—By the Bill promoted by the Manchester Corporation which the Select Committee of the House of Commons presided over by Col. Seely has passed, the Corporation is empowered to borrow 160,000*l.* to purchase land and construct waterworks, 90,000*l.* for the purchase of land and construction of street works, and 35,000*l.* for the construction of sewer works.

BLACKBURN CORPORATION BILL.—On Tuesday the Police and Sanitary Committee of the House of Commons passed the preamble of the Blackburn Corporation Bill which provides for the widening of five bridges and the approaches thereto in the borough. Part VI. of the Bill, which deals with streets and buildings, defines what is to be deemed a new building after the passing of the Act, and gives the Corporation power to make by-laws with respect to the quality of any materials with which new buildings shall be constructed. By clause 72 it will be enacted that no stream shall be covered up except in accordance with plans approved. Clause 105 authorises the Corporation to order houses to be drained by a combined operation.

MEMORIAL FOUNTAIN, GLASGOW.—A memorial fountain has been erected in Maxwell Park, Pollokshields. It has been designed by Messrs. Frank Burnet, Boston, & Carruthers, Glasgow, and executed by Messrs. Doulton & Co. at their London works, the material used in its construction being that firm's "Carrara" stoneware.

THE RHIND LECTURES, EDINBURGH.—Mr. James Curle, W.S., F.S.A.Scot., concluded the present series of Rhind Lectures in the Queen's Hall, Edinburgh, with a paper on "The Excavation of the Roman Military Station at Newstead, Melrose." The soldier was doubtless also a craftsman, said Mr. Curle, and many of his implements and tools were left behind in the pits and ditches at Newstead. Nothing was found suggesting a plough; but among the implements of husbandry were scythes, a rake, a hoe, and sickles. The latter were to be seen in use on the Trajan column. The garrison had probably carts for transport. Of these two wheels of wood with iron rims were found, and many rings for the hubs, linch-pins to keep the wheels in position. Bridle bits and horse trappings were also found. The tools of the mason, the carpenter, and the smith were all represented. In one pit over ninety objects of iron were found. They represented the contents of a camp smithy. Locks must have been common if they might judge from the keys in bronze, iron, and lead, of sizes suggesting doors and small caskets. Lamps were scarce, though specimens occurred both in iron and pottery; probably oil was not plentiful and tapers took their place. Styli for writing on waxed tablets were common, and one a tablet neatly made of pine was found. Having studied the fort, the buildings, the common objects of the daily life of its people, one naturally asked, in conclusion, how far did the results of the investigations elucidate or supplement the historical record. In one respect the result of the excavation was disappointing, it did not produce a single inscription which added to their knowledge of the site. What they found was simply a great fort reflecting in its various alterations the ebb and flow of the Roman tide of conquest. The evidence of the relics found, notably the coins and pottery, however, suggested certain conclusions. The series of coins, of which about 210 were legible, embraced a few early silver pieces which were known to have been long in circulation. The evidence of the coins tallied with finds made on other Roman sites in Scotland, and was striking confirmation of the theory advanced by Professor Haverfield that somewhere about the year 180 A.D. all the country north of the Border was finally lost to Rome.

SCHOOL BUILDING GRANTS.—The Board of Education have issued a statement showing the cases in which applications have been received by local authorities for special grants for the building of new public elementary schools, and the stage which each case had reached on March 31 last. There were forty-seven such applications from England, and the following grants had been provisionally allocated:—Gosport and Alverstoke, 2,200*l.*; Lydney, Gloucestershire, 800*l.*; Broughton-cum-Bossington and Lymington, Hampshire, 1,200*l.* each; Crompton, Lancashire, 2,000*l.*; Kirkham, Lancashire, 2,250*l.*; Thrapston, Northamptonshire, 650*l.*; Headington, Oxfordshire, 2,000*l.*; Worsborough Dale, Yorkshire, 1,200*l.* From Wales there were sixty-eight applications, and the following grants had been made or provisionally allocated:—Chwilog, Carnarvonshire, 1,000*l.*; Llanfairfechan, Carnarvonshire, 500*l.*; Penmachno, Carnarvonshire, 2,150*l.*; Pentreuchaf, Carnarvonshire, 800*l.*; Gwersyllt, Denbighshire, 2,075*l.*; Llanfihangel-Glyn-Myfyr, Denbighshire, 1,005*l.*; Llantisilio, Denbighshire, 1,070*l.*; Minera, Denbigh, 1,550*l.*; Penycae, Denbigh, 2,000*l.*; Pontfadog, Denbigh, 1,250*l.*; Tanyfron, Denbigh, 1,000*l.*; Flint, 2,750*l.*; Gwaenysgor, Flintshire, 953*l.*; Trelogan, Flintshire, 500*l.*; Dinas Powis, Glamorgan, 1,050*l.*; Llandaff, Glamorgan, 1,000*l.*; Llanishen, Glamorgan, 600*l.*; Llantrisant, Glamorgan, 1,250*l.*; Sketty, Glamorgan, 1,500*l.*; Carrog, Merionethshire, 900*l.*; Gellylydan, 700*l.*; Llawr-y-bettws, Merionethshire, 600*l.*; Aberhafesp, Montgomeryshire, 700*l.*; Cefnycoed, 600*l.*; Clatter, Montgomeryshire, 1,066*l.*

ROYAL SANITARY INSTITUTE.—Petitions from the Royal Sanitary Institute in favour of the Metropolitan Sewers and Drains Bill, the Public Health Act Amendment (Water Rights) Bill, the Public Health Bill, and the Public Health Officers Bill were on Tuesday night received by the House of Commons, and ordered to lie on the table.——At an examination in Sanitary Science as applied to Buildings and Public Works, held at Liverpool on April 24 and 25, 1908, three candidates presented themselves, and the following candidate was granted a certificate:—Mr. C. T. James (Barrow-in-Furness).

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointments, ——; Auction Sales, xxx.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements: and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competitions.

MAY 16.—**Colchester.**—PROPOSED NEW TECHNICAL INSTITUTE.—Colchester and District Higher Education Committee invite applications from architects desiring to take part in a competition for new technical institute. The committee will select fifteen architects from those who send in written applications. The plans of the selected architects will be submitted to an assessor, but the committee do not bind themselves to adopt the award. The following premiums will be awarded:—30 guineas to the architect whose design is adjudged by the assessor to be the best; 20 guineas to the second; and 10 guineas to the third. Mr. G. C. Holland, Secretary, 4, Trinity-street, Colchester.

JUNE 6.—**Shrewsbury.**—SCHOOL.—The Salop Local Education Authority invite architects to submit competitive designs for a new Secondary Day School (dual) to accommodate seventy boys and seventy girls. Conditions and particulars may be obtained from Mr. W. H. Pendlebury, Secretary for Higher Education, Shire Hall, Shrewsbury.

NO DATE.—**Eccles.**—SCHOOL.—The Education Committee invite applications from architects resident or having a place of business in Manchester, Salford, or Eccles who are willing to submit competitive plans for a permanent school in Beech-street, Winton. Mr. Edwin Parkes, Town Clerk, Town Hall, Eccles.

Contracts.

BUILDING.

MAY 4.—**Halifax.**—SCHOOL WORKS.—Halifax Education Committee invite tenders for outside painting of schools, new floors, Akroyd-place School; roof ventilators, Mixenden School; water-closet, Boothtown School; asphalting playgrounds. Plans, etc., may be seen, and forms of tender obtained, on application to Mr. James Lord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax.

MAY 4.—**Over Heage.**—CHAPEL.—Erection of Primitive Methodist Chapel at Over Heage, near Belper. Names and addresses to Mr. W. G. Smithson, A.R.I.B.A., architect, 13, Bond-street, Leeds.

MAY 4.—**Rochford.**—BOUNDARY WALL.—Rochford Guardians invite tenders for the erection of a brick boundary wall at Rochford. Mr. Frederic Gregson, Clerk, Southend-on-Sea.

MAY 4.—**Swansea.**—SHOP, ETC.—The erection of a new shop and offices at No. 17, Wind-street, for Messrs. Fitt Brothers & Davies. Plans, etc., may be seen, and bills of quantities obtained, at office of Mr. J. Shimell Andrew, Rutland-street, Swansea, on payment of deposit of 1*l.* 1s.

MAY 4.—**Wooler.**—MART.—For the erection and completion of a new mart, etc., Wooler, for the Wooler Livestock Auction Mart Company, Ltd. Names to Mr. Wm. Robson Hindmarsh, architect and surveyor, Alnwick.

MAY 5.—**Cowdenbeath.**—BUILDINGS.—Brick, joiner, plumber, plaster, and slater works of proposed buildings in Stenhouse-street, Cowdenbeath, for Mr. William Stewart. Plans, etc., may be seen, and schedules of measurement obtained, on application at 230, High-street, Cowdenbeath.

MAY 5.—**Inverness.**—HOUSES.—The various works of erecting a pair of houses in Beaufort-road. Plans, etc., with Mr. Thomas Munro, architect, etc., 62, Academy-street, Inverness.

MAY 5.—**Milnsbridge.**—HOUSES.—The erection of three dwelling-houses, Radcliffe-road, Milnsbridge. Plans may be seen, and quantities obtained, at office of Mr. Joe Ainley, architect and surveyor, Chapel-street, Slaithwaite.

MAY 5.—**New Windsor.**—GALLERY.—The T.C. of the Borough of New Windsor invite tenders for providing and fixing a gallery, at the Police-court, New Police-station, St. Leonard's-road, Windsor. Plan, etc., may be seen, and form of tender obtained, upon application at the office of the Borough Surveyor, Mr. E. A. Stickland, Alma-road, Windsor.

MAY 5.—**Nottingham.**—RECREATION ROOMS.—The Tramways Committee invite tenders for the erection of recreation rooms at the Bulwell and Sherwood Car-sheds. Drawings may be seen, and copy of the specification, etc., may be obtained, on applying to Mr. Arthur Brown, M.Inst.C.E., City Engineer, on payment of a deposit of 2*l.* 2s.

MAY 6.—**Bradford.**—ALTERATIONS TO WARDS.—The Bradford Corporation invite tenders for builder's, joiner's, plumber's, and plasterer's work in alterations to wards and laundry, City Hospital, Leeds-road. Drawings, etc., may be seen, and bills of quantities and form of tender obtained, on application to the City Architect, Whitaker-buildings, Brewery-street, Bradford.

MAY 6-18.—**Canning Town.**—SCHOOL ALTERATIONS.—West Ham Education Committee invite tenders for alterations at the Canning Town Council School. Written application to Mr. William Jacques, A.R.I.B.A., Architect to the Education Committee, 2, Fen-court, London, E.C., for copy of quantities, etc., which application must be accompanied by a deposit of 1*l.* (cheques will not be accepted).

MAY 6.—**Estate of Pinzean, N.B.**—DWELLING-HOUSE, ETC.—Estimates wanted for (1) mason, carpenter, etc., works of additions and repairs to dwelling-house at Woodend, Birse (Mr. James Christie, tenant); and (2) mason, carpenter, etc., works of additions to offices at Boghead, Birse (Mr. James Greig, tenant). Plans, etc., may be seen at the Home Farm of Finzean (Mr. G. Cocker, Estate Ground Offices).

MAY 6.—**Hove.**—DWARF WALL, IRON FENCE, AND GATES.—Tenders are invited for constructing a dwarf wall and gate piers, and providing and fixing a cast-iron fence and gates on the west side of St. Ann's Well, fronting Somerhill-road. Drawings, etc., may be seen, and forms of tender obtained, at the office of the Borough Surveyor (Mr. H. H. Scott).

MAY 6.—**Huddersfield.**—HOUSES.—The erection of twelve dwelling-houses in Almondbury Bank, Huddersfield. All particulars for same may be obtained at office of Mr. E. W. Lockwood, architect, 37, Byram-arcade, Westgate.

MAY 6.—**Redditch.**—SCHOOL EXTENSION.—Redditch Higher Education Committee invite tenders for the work of the extension of the Redditch Secondary School. Specifications, etc., can be seen at the architect's office, Mr. Bernard Perrins, Central-chambers, Redditch, and a bill of quantities obtained, upon the deposit of 1*l.* 1s.

MAY 6.—**Sculcoates, Hull.**—STATION BUILDINGS.—North-Eastern Railway Directors invite tenders for the erection of station buildings and stationmaster's house, at Sculcoates, Hull. Plans, etc., may be seen, and quantities and further information obtained, upon application to Mr. William Bell, the Company's Architect, at York.

MAY 6.—**Southampton.**—ADDITIONS TO SCHOOL.—The Education Committee invite tenders for additions to the Grammar School for Girls, Argyle-road. Plans, etc., may be seen, and bills of quantities obtained, at the Borough Engineer's office, upon production of the Borough Treasurer's receipt for the sum of 2*l.* 2s.

MAY 6.—**Tynemouth.**—HOSPITAL PAVILION.—The erection of a new male hospital pavilion and alterations to the Hospital Administrative Block at the Workhouse. Names and addresses, together with a deposit of 2*l.* 2s., to Mr. Henry Gibson, architect, 55, Camden-street, North Shields.

MAY 7.—**Cleethorpes.**—CHURCH WORKS.—The erection of an organ chamber and vestry to St. Peter's Church, Cleethorpes. Plans, etc., may be seen on application at the Vicarage. Quantities can be obtained on application to Mr. G. R. Boreham, quantity surveyor, 24, John-street, Sunderland.

MAY 7.—**Cork.**—COTTAGES.—Cork R.D.C. invite tenders for building thirty-seven labourers' cottages and fencing same number of cottage plots. Plans, etc., can be obtained from the Clerk to the R.D.C. on payment of 5s. Mr. John Cotter, Clerk of Council, Board-room, Workhouse, Cork.

MAY 7.—**Elland.**—SIX HOUSES.—The erection of six houses in Workhouse-lane, Elland. Plans, etc., at offices of Mr. Fred. F. Beaumont, architect and surveyor, Southgate-chambers, Halifax.

MAY 7.—**Felixstowe.**—AIR-COMPRESSOR STATION.—Felixstowe and Walton U.D.C. invite tenders for work required to be done in the extension of the Air-compressing Station at the Sewage Works, for the accommodation of a Cornish boiler. Specifications may be seen, and bills of quantities obtained, on application to Mr. H. Clegg, A.M.Inst.C.E., Surveyor to the Council, Town Hall, Felixstowe.

MAY 7.—**Godalming.**—COTTAGES.—The erection of either one or three pairs cottages in accordance with plans, etc., to be inspected at the office of the Godalming and District Co-operative Society, Ltd.

MAY 7.—**Tulloch Estate, N.B.**—HOUSES.—Estimates are wanted for the mason, carpenter, slater, and plaster works of the following dwelling-houses: (1) Hillhead of Tulloch (Alexr. Mitchell, tenant); (2) Byebush (Alexr. Duncan, tenant). Plans, etc., may be seen with the tenants and with the architect, Mr. James Cobban, Haddo House.

MAY 8.—**Birkenshaw.**—SAW MILLS.—Erecting extensive saw mills, engine and boiler houses, chimney, etc., at Birkenshaw. Drawings may be seen, and quantities obtained, on application to the architect, Mr. R. F. Rogerson, 14, Henry-street, Brighouse.

MAY 8.—**Estate of Straloch, N.B.**—ALTERATIONS.—The mason, carpenter, and slater works of alterations on steading at Woodend, for Mr. Alex. Crombie. The plans, etc., may be seen with Mr. Alex. Muirden, Overseer, Home Farm, Straloch.

MAY 8.—**St. Erme.**—CHURCH RESTORATION.—Restoration of St. Erme Church, near Truro. Plans, etc., to be seen at the Rectory. Mr. E. H. Sedding, architect, Bank-chambers, Wadebridge; or 11, Queen Anne-terrace, Plymouth.

MAY 9.—**Duthil, Carr-Bridge.**—CHURCH.—The mason, carpenter, glazier, plumber, slater, plasterer, and painter works of new United Free Church, Duthil, Carr-Bridge. Plans, etc., to be seen with, and schedules of quantities obtained from, Mr. Alexander Cattanach, architect, Kingussie.

MAY 9.—**Fence Houses.**—HOUSES.—The Lambton Collieries, Ltd., invite tenders for the building of twenty-eight colliery houses at Lumley Sixth Pit, near Fence Houses Station. Plans, etc., can be seen at the architect's office, Philadelphia Lime Depôt.

MAY 9.—**Llansamlet.**—CHAPEL.—For a new chapel at Peniel Green, Llansamlet, for the Welsh Calvinistic Methodists. Plans, etc., may be seen with Mr. Rees Llewellyn, architect, Birchgrove, Llansamlet.

MAY 9.—**Lochore.**—SCHOOL.—The mason, brick, joiner, plumber, plaster, slater, and painting work of proposed school at Lochore, for Messrs. The Ballingry School Board. Plans, etc., may be seen, and all further information obtained on application to Mr. James T. Scobie, architect, Dunfermline and Lochgelly, from whom schedules of measurements may be had on deposit of 1*l.* 1s.

MAY 9.—**Pontypridd.**—VILLAS.—The erection of three semi-detached villas on the Common, Pontypridd, for Mr. J. E. Spickett. Plans, etc., may be seen at office of Mr. T. E. Richards, A.R.I.B.A., architect and surveyor, Market-square-chambers, Pontypridd.

MAY 11.—**Aberdare.**—HALL, SCHOOL-ROOMS, ETC.—Building new hall, school-rooms, cottage, out-buildings, etc., at Aberdare, for the Trustees of Siloa Welsh Independent Chapel, Aberdare. Plans, etc., may be seen at office of Mr. Thomas Roderick, architect, Clifton-street, Aberdare.

MAY 11.—**Aberdare.**—HOUSES.—For building ten houses at Aberdare for the Monk-street Building Club. Plans, etc., may be seen at office of Mr. Thomas Roderick, architect, Clifton-street, Aberdare.

MAY 11.—**Keith.**—ADDITIONS, ETC.—For mason, carpenter, slater, plumber, and plaster works of additions to, and alterations on, property in Mid-street, Keith, for Mr. John Symon, painter. Plans, etc., to be seen with Mr. D. J. Corrigall, architect, Keith.

MAY 11.—**Mortlake.**—OFFICES.—The U.D.C. of Barnes invite tenders for building additional offices at the Council House, High-street, Mortlake. The drawings, etc., can be seen, and form of tender obtained, on application to the Engineer and Surveyor at the Council House, High-street, Mortlake.

MAY 11.—**New Pentland.**—COTTAGE.—Edinburgh and District Water Trustees invite tenders for the mason, brick, carpenter, joiner, plumber, slater, plaster, and cement works in connexion with cottage proposed to be erected at New Pentland. Schedules of quantities may be had on application to Mr. E. C. Carse, architect, 37, Frederick-street, Edinburgh, at whose office plans of the proposed cottage may be seen.

MAY 11.—**Penderyn.**—ALTERING CHAPEL, ETC.—Altering and rescating the Welsh Calvinistic Chapel and cottage Penderyn. Plans, etc., may be seen either at office of Mr. Thomas Roderick, architect, Clifton-street, Aberdare, or at the Chapel House, Penderyn.

* MAY 12.—**Blackpool.**—POST-OFFICE.—The Commissioners of H.M. Works, etc., invite tenders for erection of a new post-office at Blackpool. For further particulars see advertisement in this issue.

MAY 12.—**Exeter.**—ADDITIONS TO REFORMATORY.—For new gymnasium, workshops, and additions to the main building at the Devon and Exeter Boys' Reformatory. Plans, etc., at offices of Messrs. E. H. Harbottle & Son, architects, County-chambers, Exeter.

MAY 13.—**Oxford.**—POLICE-STATION ALTERATIONS.—Oxford Corporation invite tenders for the erection of cells, alterations, etc., to premises in James-street, Oxford. Plans, etc., can be seen at the Estates Surveyor's office, Town Hall, Oxford.

MAY 14.—**Skegness.**—SCHOOL.—Lindsey C.C. Education Committee invite tenders for the erection of an Elementary School at Skegness, in the County of Lincoln. Bills of quantities, etc., may be had on application to Messrs. Scorer & Gamble, architects, Bank-street-chambers, Lincoln, and on payment to them of 2*l.* 2s.

MAY 14.—**Trealaw.**—MEMORIAL HALL, ETC.—The erection of the Judge Williams Memorial Hall and Institute at Trealaw for Mr. Rhys Williams. Plans, etc., can be seen, and bills of quantities obtained, at office of Messrs. A. O. Evans, Williams, & Evans, architects, Pontypridd, on payment of a deposit of 3*l.* 3s.

* MAY 15.—**Hackney.**—BANDSTAND.—The London C.C. invite tenders for erection of a wooden bandstand, with slate roof, at the London Fields, Hackney. For further particulars see advertisement in this issue.

MAY 15.—**Seaton.**—HOUSE AND COTTAGE.—A house and cottage at Seaton for Miss Smith near the Seaton Beach Hotel. Plans, etc., at offices of

Messrs. E. H. Harbottle & Son, architects, County-chambers, Exeter.

MAY 18.—**Camborne.**—CHURCH.—Proposed United Methodist Church at Camborne. Plans and specifications may be seen by appointment at the office of Mr. Sampson Hill, architect, Green-lane, Redruth.

✱ MAY 18. — **Canning Town.** — ALTERATIONS TO SCHOOL.—The West Ham Education Committee invite tenders for alterations at the Canning Town Council School. For further particulars see advertisement in this issue.

MAY 18.—**Chester.**—CONVENIENCES.—The construction of underground conveniences (*a*) in Northgate-street; and (*b*) at the junction of Bridge-street and Grosvenor-road. Plans, etc., can be seen at the City Surveyor's Office, Town Hall, Chester, and quantities obtained on deposit of 1*l.*

MAY 18.—**Grangemouth, N.B.**—SCHOOL.—Grangemouth Parish School Board invite tenders for the erection of a new Supplementary and Higher Grade Public School at Grangemouth. The plans can be seen at the offices of Messrs. Wilson & Tait, architects, B.L. Bank-buildings, Grangemouth, from whom schedules of quotations can be obtained on receipt of a deposit of 2*l.* 2s.

✱ MAY 19. — **London.** — DISINFECTING STATION.—The B.C. of Bermondsey invite tenders for a disinfecting station at their Neckinger Depôt. For further particulars see advertisement in this issue.

✱ MAY 20. — **Ware.** — ENGINE-HOUSE. — The Ware U.D.C. invite tenders for engine-house, etc., at Stanstead Abbotts, in the County of Hertford. For further particulars see advertisement in this issue.

✱ MAY 21.—**Chelmsford.**—ADDITIONS.—The Chelmsford and Essex Hospital, etc., Committee invite tenders for alterations and additions to the hospital. For further particulars see advertisement in this issue.

NO DATE. — **Darwen.** — DWELLINGS.—Erection of three pairs of semi-detached dwellings on Higher Croft Estate, Lower Darwen. Bills of quantities, etc., on application to the architect, Mr. J. L. Crumblehulme, 4, Albert-square, Manchester.

NO DATE.—**Hasland.**—HOUSE AND SHOP.—Erection of house and shop at Birdholme, Hasland. Apply to Mr. Tom S. Wilcockson, architect, Chesterfield.

NO DATE.—**Hull.**—MISSION HALL.—The erection of proposed mission hall, Beverley-road, Hull, for the Trustees of the Christian Science Church. Plans may be seen, and quantities obtained, on application to Mr. Melville Lenham, architect and surveyor, 21, Bond-street, Savile-street, Hull.

NO DATE. — **Leek.** — EXTENSIONS TO HOSPITAL.—Extensive additions to the Leek Memorial Cottage Hospital. Plans, etc., on application at offices of Messrs. Wm. Sugden & Son, architects, Leek, and bills of quantities can be obtained on deposit of 2*l.* 2s.

ENGINEERING, IRON, AND STEEL.

MAY 4.—**London.**—WHEELS AND AXLES.—The Bengal and North-Western Railway Company Directors invite tenders for the supply and delivery of 600 pairs of wheels and axles, as per specification to be seen at the Company's Offices, 237, Gresham House, Old Broad-street, London, E.C. For each specification a fee of 10s. will be charged, which cannot, under any circumstances, be returned.

MAY 5. — **London.** — ALTERING PIPES. — Lambeth Board of Guardians invite tenders for work required to be done in connexion with testing and altering the position of the existing blow-off tank and steam pipes at the Workhouse, Renfrew-road, Lower Kennington-lane, S.E. Specification, etc., may be obtained from Mr. J. L. Goldspink, Clerk, Guardians' Offices, Brook-street, Kennington, S.E., upon payment of 2*l.* in respect thereof.

MAY 6. — **Hanley.**—BOILER.—Tenders are invited for one Lancashire boiler for the Public Baths. Specifications, etc., may be obtained at office of Mr. Joseph Lobley, Borough Engineer and Surveyor, Town Hall, Hanley.

MAY 6. — **Portsmouth.**—ELECTRIC LIGHTING.—For wiring and fitting up for lighting by electricity the laundry at the Infectious Diseases Hospital, Milton, in the Borough of Portsmouth. The specification, etc., may be seen, and a form of tender obtained, at the Borough Engineer's Office, at the Town Hall.

MAY 7.—**Nottingham.**—RETORT MOUTHPIECE.—The Gas Committee of the Corporation of Nottingham invite tenders for the manufacture of cast-iron retort mouthpieces and clinkering doors for the Eastcroft and Basford Gas Works. Plans, etc., may be obtained at the Gas Engineer's office, 6, George-street, Nottingham.

MAY 11.—**Darlington.**—BOILER.—The Darlington Corporation invite tenders for a Lancashire boiler and superheater. Specification, etc., may be obtained from the Borough Electrical Engineer, Electricity Works, Haughton-road, Darlington, on payment of a deposit of 1*l.* 1s.

MAY 11. — **Glasgow.** — RAILWAY SIDING.—The Distress Committee of the Burgh of Glasgow invite offers for the material required in the construction of between seven and eight furlongs of railway siding at Palacerigg Labour Colony, the sleepers, rails, chairs, and fishplates to be of relayable material. Specifications, etc., may be had on application to Mr. J. Paterson, Clerk to the Committee, 30, Cochrane-street, Glasgow.

MAY 11. — **Peterston-super-Ely.** — BRIDGE. — A composite (steel and timber) bridge over the River Ely for Mr. John Cory, of Duffryn. The said bridge will be situated at or near Peterston-super-Ely, Glamorganshire. Plans may be seen at the offices of the consulting engineer, Mr. H. Howard Humphreys, M.Inst.M.E., A.M.Inst.C.E., 28, Victoria-street, Westminster, or at the Coryndon Estate Office, Peterston-super-Ely. Specifications, etc., will be supplied upon tenderers depositing 3*l.* 3s.

MAY 12. — **Wimbledon.** — HEATING.—The Corporation invite schemes for the heating of the isolation hospital, Gap-road. General conditions, etc., may be obtained on application to the Borough Surveyor, Town Hall, Wimbledon.

MAY 14.—**London.**—GIRDERS.—The Mexican Railway Company, Ltd., invites tenders for the supply and delivery of girders for bridges. Specifications, etc., can be obtained at the Company's office on payment of 5s. each. Mr. John T. Denniston, Secretary, The Mexican Railway Company, Ltd., 6, Broad-street-place, London, E.C.

MAY 20. — **Stanstead Abbotts.** — PLANT, ETC.—Ware U.D.C. invite tenders for the supply and erection of suction gas plant, gas-engines, pumps, and other appliances in connexion with the lifting of sewage at their pumping station at Stanstead Abbotts. Forms of tender, etc., may be obtained, and drawings can be seen, on application to Mr. Joseph Francis, M.Inst.C.E., the Engineer of the Works, at 28, Victoria-street, Westminster, on payment of 3*l.* 3s.

MAY 22.—**Workington.**—HEATING SCHOOL.—Workington Education Committee invite separate tenders for the efficient heating of Lawrence-street (mixed) and St. Michael's Infants' Schools by hot-water radiators. Those tendering must submit their own plans and specifications for carrying out the work. Mr. E. J. Hepworth, Secretary, Education Offices, Workington.

MAY 25. — **London.** — GIRDERS. — Great Western Railway Directors invite tenders for the supply of about 240 tons of steel girders and other steel and iron work of British manufacture. Plans, etc., may be seen, and forms of tender, etc., obtained, at the office of the Engineer at Paddington Station.

SEPTEMBER 12. — **Bangkok.**—LOCOMOTIVES.—Tenders are requested for the supply of:—Three passenger locomotives, two goods locomotives, four tank locomotives, for Royal Siamese State Railways. Specifications, etc., may be obtained, on payment of 6s., at the Siamese Legation in London.

NO DATE.—**Wakefield.**—FANS.—The West Riding of Yorkshire Rivers Board invite tenders for two exhaust electrical fans and necessary wiring switches, etc., for the laboratory. For particulars apply to Rivers Board, Wakefield.

MISCELLANEOUS.

MAY 4. — **Teignmouth.** — HAULING.—Teignmouth U.D.C. invite tenders for carrying out the carting requirements of the Gas Department. The form of contract may be inspected, and a copy of the specification, etc., obtained, on application to Mr. J. Alex. Gray, Gas Manager, Gasworks, Teignmouth.

MAY 4.—**Wellingborough.**—STEAM ROLLING.—Wellingborough R.D.C. invite tenders for the hire of a steam roller. Mr. G. F. Bearn, Surveyor, Cedar Lawn, Wellingborough, of whom further particulars can be obtained.

MAY 5.—**Aspull.**—SCAVENGING.—The Aspull D.C. invite tenders for one year for removal of nightsoil in the district. Mr. L. Athron, Clerk.

MAY 5. — **Lepton.** — STEAM ROLLING, ETC. — Lepton U.D.C. invite tenders for the steam rolling and scarifying in their district. Mr Joe Sharp, Clerk to the Council, 23, John William-street, Huddersfield.

MAY 7.—**Cork.**—SCAVENGING.—Cork R.D.C. invite tenders for removal of refuse, etc., from houses. Forms may be obtained at the Board-room, Workhouse.

MAY 7.—**Hebburn.**—ASPHALTING TENNIS COURTS.—The U.D.C. of Hebburn invite tenders for asphalting tennis courts at the Park. All information, etc., may be obtained from the Surveyor (Mr. H. Paterson) at the Council Offices, Hebburn.

MAY 12. — **East Ham.** — SCAVENGING. — For the supply of horses and carmen for the collection and removal of house refuse, street scavenging, watering, etc. Form of tender, etc., may be obtained upon application to Mr. C. E. Wilson, Town Clerk. Town Hall, East Ham, E.

✱ MAY 12.—**Eltham.**—OAK FENCING.—The London C.C. invite tenders for supply and erection of close pale oak fencing at Eltham Park, S.E. For further particulars see advertisement in this issue.

MAY 13. — **Belfast.** — ELECTRIC LIGHT MASTS.—The Belfast Harbour Commissioners invite tenders for the supply of five iron latticed-built electric light masts, 70 ft. high from the ground line. Mr. W. A. Currie, Secretary, Harbour Office, Belfast.

MAY 13.—**Dublin.**—SLEEPERS.—Dublin and South-Eastern Railway Directors invite tenders for the supply of 30,000 rectangular sleepers, 8 ft. 11 in. by 10 ft. by 5 ft. Specifications, etc., can be had on application to Mr. S. J. Shannon, No. 1, Westland-row, Dublin.

✱ MAY 14. — **Kensington.** — WARD LOCKERS. — The Guardians of Kensington invite tenders for 100 birchwood ward lockers for their Infirmary, Marloes-road, W. For further particulars see advertisement in this issue.

MAY 15. — **Dunfermline.** — QUARRYING, ETC.—The Dunfermline District Committee of the Fife C.C. invite tenders for:—(1) The quarrying of 700 cubic yds. of whinstone in Kinneddar Quarry, Saline; (2) hauling out this quantity of material. Specification can be seen, and further information obtained, from Mr. David Mackenzie, C.E. District Road Surveyor, County-buildings, Dunfermline.

MAY 16. — **Pebworth.** — HAULING. — Pebworth R.D.C. invite tenders for hauling materials. Printed form of tender, etc., can be obtained on application to Mr. Edward Wadams, Clerk to the Council, Union Offices, Evesham.

✱ MAY 18. — **Portsmouth.**—ASPHALT PAVING.—The Portsmouth T.C. invite tenders for supplying and laying block asphalt pavement. For further particulars see advertisement in this issue.

MAY 19.—**Bradford.**—WASHING STALLS, ETC.—Manchester Corporation invite tenders for the supply and fixing of:—Thirty-eight washing stalls, forty drying horses, four hydro extractors, for the Baths and Washhouses at Victoria-street, Bradford. Specifications may be obtained at the office of the City Architect, Town Hall, upon payment of 1*l.* 1s. All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester."

✱ MAY 19.—**London.**—ASPHALT AND WOOD PAVING.—The Streets Committee of the Corporation of London invite tenders for asphalt and wood paving to various places within their district. For further particulars see advertisement in this issue.

✱ JUNE 3. — **Southampton.** — DEALS, ETC. — The Director-General, Ordnance Survey, invites tenders for supply of deals and matched boarding. For further particulars see advertisement in this issue.

PAINTING, etc.

MAY 8.—**Warrington.**—PAINTING.—The Education Committee of the Council of the County Borough of Warrington invite tenders for the painting of the various schools. Specifications, etc., may be seen, and forms of tender obtained, at the office of the Borough Surveyor, Town Hall.

MAY 9. — **Irishtown.** — PAINTING. — The Select Vestry of St. Matthew's Church, Irishtown, invite tenders for painting etc., exterior and interior of church, in accordance with specification, copies of which can be had from Mr. J. Howard, Hon. Secretary, 12, Claremont-road, Sandymount.

MAY 11.—**Hastings.**—PAINTING.—The Corporation invite tenders for painting the bridge over the South-Eastern Railway in Priory-avenue, Hastings. Specification may be seen, and form of tender obtained, at the office of the Borough Engineer, Mr. P. H. Palmer, M.Inst.C.E., Town Hall, Hastings.

JUNE 1.—**Swindon.**—PAINTING, ETC.—The Council of the G.W.R. Mechanics' Institution, Swindon, invite tenders for decorating, etc., the large hall (first floor). For specification, etc., apply to Mr. H. J. Southwell, Secretary.

NO DATE.—**Newcastle-upon-Tyne.**—PAINTING, ETC. —The Education Committee invite tenders for the painting and cleaning of Council Schools at midsummer. For full particulars send stamped, addressed, foolscap envelope at once to the Secretary, Education Offices, Northumberland-road, Newcastle-upon-Tyne.

ROADS, SANITARY, AND WATER WORKS.

MAY 4. — **Auckland.** — SEWERS.—The R.D.C. of Auckland invite tenders for providing and laying down about 1,864 yds. of 9-in. and 6-in. earthenware pipe sewers, etc., at California, Woodside, and Black-road, Witton Park. Plans, etc., can be seen, and further particulars obtained, on application to Mr. Charles Heslop, 9, Cradock-street, Bishop Auckland

MAY 4. — **Bedford.**—PAVING, ETC.—Bedford Urban Sanitary Authority invite tenders for carrying out paving and road-making in Shaftesbury-avenue, according to plans, etc., which, with form of contract, may be seen, and any other information obtained, at the Borough Surveyor's office, Town Hall, Bedford.

MAY 4.—**Stockport.**—PERMANENT WAY.—Stockport Tramways Committee invite tenders for the manual and team labour required in taking-up and relaying the permanent way, paving, etc., in the repairs and renewals to the tramway track on the Woodley route and in Heaton-lane. Plans may be seen, form of tender, etc., obtained, on application to Mr. John Atkinson, A.M.Inst.C.E., Borough Surveyor, Stockport.

MAY 4.—**Wolverhampton.**—DRAINAGE SCHEME AT COTTAGE HOMES.—Plans, etc., prepared by Mr. F. T. Beck, architect, Darlington-street, Wolverhampton. Forms, etc., from Mr. Frank Harrison, Clerk to the Guardians, Union Offices, Wolverhampton.

MAY 5.—**East Ham.**—TRAMWAY RECONSTRUCTION.—The Corporation invite tenders for the reconstruction for electric traction on the overhead trolley system of the existing section of horse tramways between High-street North and Green-street, Romford-road, including the permanent-way paving, etc. Copy of specification, etc., may be had on application to Mr. A. H. Campbell, M.Inst.C.E., Borough Engineer, Town Hall, East Ham, or of Mr. W. C. Ullmann, M.Inst.E.E., Tramways Engineer and Manager, Nelson-street, East Ham, on payment of the sum of 2*l.* 2s.

MAY 5.—**Margate.**—MAKING-UP.—Margate T.C. invite tenders for the making-up of roads. The plans, etc., can be seen, and all particulars obtained, on application to Mr. E. A. Borg, Borough Surveyor, Town Hall, Margate.

MAY 6.—**Leigh-on-Sea.**—SEWERING.—Leigh-on-Sea U.D.C. invite tenders for the various works required to be done in constructing 2,240 lin. yds. of 9-in. diameter pipe sewer, with manholes. Plans, etc., can be seen, and a copy of the quantities obtained, on application to Mr. John W. Liversedge, A.M.Inst.C.E., Council Offices, Leigh-on-Sea, on payment of 2*l.* 2s. deposit.

MAY 7.—**Ipswich.**—SEWAGE EJECTOR CHAMBER.—The construction of a sewage ejector chamber in Beaconsfield-road, Ipswich. Plans can be seen, and further information obtained, on application at office of Mr. E. Buckham, Borough Surveyor, Town Hall, Ipswich.

MAY 7. — **Reading.** — MAKING-UP.—For making-up parts of Addison-road and Sackville-street, for the Urban Sanitary Authority. Plans may be seen, and specifications, etc., obtained, at the offices of Mr. John Bowen, A.M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Reading.

MAY 8.—**Muswell Hill.**—STORM-WATER CULVERT.—Hornsey T.C. invite tenders for the construction of about 436 ft. run of 42-in. storm-water culvert at their Sewage Farm, Coppett's-road, Muswell Hill. Forms of tender, etc., can be obtained from Mr. E. J. Lovegrove, Borough Engineer and Surveyor, Municipal Offices, Highgate.

MAY 9.—**Hamilton, etc.**—PAVING, ETC.—The District Committee of the District of the Middle Ward of the County of Lanark invite tenders for executing the work of granolithic paving, kerb and channel, and causeway crossings in the parishes of Blantyre, Bothwell, Cambuslang, Cambusnethan, Dalserf, Dalziel, and Hamilton. Specifications may be obtained on application to Mr. John Clarke, Road Surveyor, District Offices, Hamilton.

MAY 9. — **Manchester.** — STREET WORKS. — Manchester Corporation (Withington Committee) invite tenders for the draining, kerbing, flagging, and the paving of the carriageways with granited natural rock asphalt, of Wilbraham-road, etc., Chorlton-cum-Hardy. Plans, etc., can be seen, and a form

of tender, etc., obtained, from the Surveyor to the Committee, Town Hall, West Didsbury.

MAY 9.—**Reigate.**—STREET IMPROVEMENTS.—Reigate T.C. invite tenders for the execution of private street improvements in Victoria and Redstone roads, Earlswood, in accordance with the plans, sections, and specification prepared by Mr. Fred T. Clayton, C.E., the Borough Surveyor. Bills of quantities, etc., can be obtained on application to the Borough Surveyor at his office at the Municipal Buildings at Reigate, where the plans, etc., may be inspected.

MAY 9.—**Stretford.**—PAVING, ETC.—Stretford U.D.C. invite tenders for paving, etc., in passage behind Eastnor-street, 1-19, Park-grove, etc. The drawing, etc., may be seen, and form of tender, etc., obtained, on application to Mr. Ernest Worrall, the Council's Surveyor, Council Offices, Old Trafford, on deposit of a cheque for 2*l.* 2s.

MAY 11. — **Beaconsfield.** — SEWERAGE WORKS. — Beaconsfield U.D.C. invite tenders for the construction of about 286 yds. of 6-in. stoneware pipe sewer, 130 yds. of 4-in. branch drains, and the formation of a gravel footpath. Plans, etc., may be seen, and copies of the bill of quantities, etc., can be obtained, upon application to Mr. John Baker, A.M.Inst.C.E., civil engineer and surveyor, 75, High-street, Slough on payment of 1*l.* 1s.

MAY 11.—**Horton Kirby.**—SEWERAGE WORKS.—The R.D.C. of Dartford invite tenders for the construction of a sewer, about 670 yds. in length, in the Parish of Horton Kirby. Drawings, etc., may be inspected at the office of the Council's Chief Inspector of Nuisances, Mr. J. E. Goreham, 63, Lowfield-street, Dartford.

MAY 11.—**Ilford.**—STREET WORKS.—Ilford U.D.C. invite tenders for levelling, metalling, flagging, paving, c unnelling, making good, and lighting Coventry-road from Toronto to Brisbane road; Hampton-road, from No. 179 to Sunnyside-road; and Laburnum-grove. Plans, etc., may be seen, and forms of tender obtained (on payment of a deposit of 2*l.* 2s.), upon application to Mr. H. Shaw, M.Inst.C.E., Surveyor to the Council, at the Town Hall, Ilford.

MAY 11.—**Leeds.**—PAVING, ETC.—Leeds Highways Committee invite tenders for the paving and flagging of streets. Also for tar-macadamising and concrete flagging. Drawings may be seen at the City Engineer's Office, Municipal Buildings. Forms of tender, etc., may be obtained, and copies of the documents forming the contract inspected, on application at the Highways Office, 155, Kirkstall-road.

MAY 12.—**Bedlingtonshire.**—SEWERAGE WORKS.—Bedlingtonshire U.D.C. invite tenders for the execution of sewerage works. Drawings, etc., may be seen, and quantities, etc., obtained, by appointment at the office of the Surveyor to the Council, Mr. J. E. Johnston, Front-street, Bedlington.

MAY 12.—**Birmingham.**—CONSTRUCTION OF SEWERS AT NECHELLS.—The Public Works Committee invite tenders for the construction of about 590 lin. yds. of 6-in. to 27-in. iron and stoneware pipe sewers in and abutting Trevor-street, etc. Plans, etc., may be seen, and quantities and forms of tender obtained, on deposit of the sum of 2*l.* Mr. Henry E. Stilgoe, M.Inst.C.E., City Engineer and Surveyor, the Council House, Birmingham.

MAY 14.—**Haltwhistle.**—WATER WORKS.—The Haltwhistle R.D.C. invite tenders for the laying of about four miles of 3-in. cast-iron water pipes with covered service reservoir valves, etc., complete at Haltwhistle. Plans may be seen, and quantities, etc., obtained, on application to the engineer, Mr. J. E. Parker, A.M.Inst.C.E., Post Office-chambers, Newcastle-on-Tyne, or to Mr. Thomas Dryden, Clerk Council Offices, Haltwhistle, on depositing cheque for 1*l.* 1s.

MAY 14.—**Kendal.**—SEWER.—The construction of a 9-in. pipe sewer, about 528 yds. 1 in. in length, with manholes, etc., in Castle-street. Plans, etc., can be seen, and copies of quantities obtained, on application at office of Mr. F. W. Oxberry, C.E., Borough Engineer, Town Hall, Kendal.

* MAY 15.—**Bethnal Green.**—CONVENIENCES.—The London C.C. invite tenders for erection of conveniences at Meath Gardens, Bethnal Green. For further particulars see advertisement in this issue.

MAY 18.—**Margam.**—PORT TALBOT AND GLYNCORRWG SEWERAGE, CONTRACT No. 1.—Margam U.D.C. Sewerage Committee invite tenders for:—(1) Main intercepting sewer; (2) flushing pond and penstock chamber; (3) main outfall to 550 yds. beyond low-water mark; (4) subsidiary works. The drawings may be seen, and copies of the specification, etc., may be obtained, on application to Messrs. William Fox & La Trobe Bateman, 5, Victoria-street, Westminster, S.W., on payment of a deposit of 10*l.* The drawings may also be seen at the office of the Council's Surveyor, Taibach, Port Talbot.

NO DATE. — **Dorking.** — TAR SPRAYING.—Dorking U.D.C. invite tenders for tar spraying 1¼ miles of main road. Particulars may be obtained from the Surveyor, 64, South-street.

STONE, MATERIALS, AND STORES.

MAY 4.—**Glasgow.**—STORES.—Glasgow Corporation invite tenders for the supply of stores, etc. Forms of tender may be obtained on application to Mr. James Whitton, Superintendent of Parks, City-chambers, 249, George-street, Glasgow.

MAY 4. — **Portsmouth.** — WOOD BLOCKS.—Portsmouth Corporation Tramways Committee invite tenders for the supply of 2,500 9 in. by 3 in. by 4½ in. and 2,500 6 in. by 3 in. by 4½ in. Karri or Jarrah wood paving blocks. The specification and form of tender may be obtained upon application to the Tramways Engineer, Mr. V. G. Lironi, M.Inst.M.E., A.M Inst.E.E., Engineer's Offices, Fratton-grove, Portsmouth.

MAY 4.—**Warrington.**—CEMENT.—The Paving and Sewerage Committee of the Council of the County Borough of Warrington invite tenders for 100 tons of Portland cement. Specifications, etc., may be obtained at the office of the Borough Surveyor, Town Hall.

MAY 4.—**West Ashford.**—GRANITE.—West Ashford R.D.C. invite tenders for the supply of about 1,670 yds. of granite. Further information and forms of tender can be obtained on application to Mr. Alfred Sims, Surveyor to the Council, Surveyor's Office, Charing.

MAY 5.—**Manchester.**—TROLLEY WIRE.—Manchester Corporation Tramways Committee invite tenders for the supply of hard-drawn copper trolley wire. Specifications, etc., may be obtained on application to Mr. J. M. M'Elroy, General Manager, Tramways Department, 55, Piccadilly, Manchester.

MAY 5.—**Stocksbridge.**—ROAD MATERIAL.—Stocksbridge U.D.C. invite tenders for the supply of road material. Forms of tender, etc., to be had from Mr. J. Marsden, Clerk to the Council, Council Offices, Stocksbridge.

MAY 6.—**Barry.**—MATERIALS.—Barry U.D.C. invite tenders for the supply and delivery of:—Lead and compo pipe, pig and sheet lead, block tin, etc. Further particulars and forms of tender may be obtained from Mr. T. E. Franklin, Engineer and Manager, Gasworks, Barry.

MAY 6.—**Hawarden.**—STONE.—Hawarden R.D.C. invite tenders for the supply of road stones for the maintenance of roads. Forms of tender, etc., may be had on application to the District Surveyor, Mr. Wm. Newton, Drury, Buckley, Chester.

MAY 6.—**Irlam.**—MATERIALS.—The Irlam U.D.C. invite tenders for materials for the year ending March 31, 1909. The Council also invite tenders for paving, flagging, etc. (labour only), and hire of steam roller. Forms of tender, etc., may be obtained from Mr. G. H. Kay, Engineer and Surveyor, Council Offices, Irlam.

MAY 6.—**Manchester.**—RAILS, ETC.—The Cleansing Committee of the Manchester Corporation invite tenders for the supply of 23 tons of 30-lb. steel rails, fishplates, etc., and 1,000 creosoted sleepers for their Carrington Estate; also 500 ash cart felloes, 1,000 oak cart spokes, twelve pairs oak naves, three red elm butts, three poplar butts, and six larch butts, and twelve months' supply of agricultural drain pipes. Specifications may be obtained from Mr. Robert Williamson, Superintendent of the Cleansing Department, Town Hall, Manchester.

MAY 11.—**Hanley.**—MATERIALS, ETC.—The supply of materials and work. Specification, etc., may be obtained at office of Mr. Joseph Lobley, Borough Engineer and Surveyor, Town Hall, Hanley.

MAY 11.—**Perth.**—SUPPLIES.—Perth T.C. invite supplies for Burgh Surveyor's Department. Specifications, etc., may be had at the Burgh Surveyor's office, 16, Tay-street, Perth.

MAY 11.—**Preston.**—ROAD METAL.—The Lancashire C.C. invite tenders for the supply of 7,000 tons of road metal. Specification, etc., may be had on application to Mr. W. H. Schofield, A.M.Inst.C.E., County Surveyor, County Offices, Preston.

MAY 12.—**Richmond.**—STORES.—Richmond Main Sewerage Board invite tenders for the supply of stores required at their works, Kew Gardens. Specifications, etc., may be obtained on application at the office of the Engineer to the Board, West Hall-road, Kew Gardens, S.W., on payment of 10s. for each specification.

MAY 13.—**Belfast.**—ROAD MATERIAL.—The Belfast Harbour Commissioners invite tenders for about 4,000 tons of whinstone pitching and about 1,800 tons of whinstone road metal. Mr. W. A. Currie, Secretary, Harbour Office, Belfast.

MAY 15. — **Brighton.** — GRANITE KERB, ETC. — Brighton Corporation invite tenders for the supply of dressed granite kerb and channel. The specification, etc., may be obtained on application at the office of the Borough Surveyor, at the Town Hall, Brighton.

MAY 15.—**Dunfermline.**—MACHINE METAL BREAKING.—The Dunfermline District Committee of the Fife C.C. invite tenders to break, by steam-breaking machine, whinstone rubble for road metal. Specification can be seen, and further information obtained, from Mr. David Mackenzie, C.E., District Road Surveyor, County-buildings, Dunfermline.

MAY 16.—**Beccles.**—BROKEN GRANITE.—Tenders are invited for the supply and delivery on to Corporation Wharf, Beccles, of 450 tons of 2-in. broken granite. Mr. T. O. Cudbird, C.E., Borough Surveyor, Beccles.

MAY 18.—**Margam.**—PIPES.—Margam U.D.C. invite tenders from pipefounders for the manufacture and delivery of about 1,770 tons of cast-iron pipes, etc. The drawings may be seen, and copies of the specification, etc., may be obtained, on application to Messrs. William Fox & La Trobe Bateman, 5, Victoria-street, Westminster, S.W., on payment of a deposit of 5*l.*

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*FREEHOLD LAND, LEYTON—Red Lion Hotel, Leytonstone	Protheroe & Morris	May 4
*FREEHOLD ESTATE, PALMER'S-GREEN—At the Mart	Driver, Jonas, & Co.	do.
*BUILDING MATERIALS, ETC., CHELSEA—On the Premises	Horne & Co.	May 7
*BUILDER'S PLANT AND STOCK, CHICHESTER—The Hornet, Chichester	Wyatt & Son	do.
*FREEHOLD PROPERTY, SURBITON—At the Mart	Chesterton & Sons	do.
*PLTS. OF LAND, WHARVES, ETC. (VARIOUS PLACES), BY ORDER OF L.C.C.—At the Mart	Andrew Young	May 12
*FREEHOLD BUILDING LAND, TOTTENHAM—At the Mart	Stanley Parkes & Brown	do.
*FREEHOLDS, LINCOLN'S-INN-FIELDS, W.C.—At the Mart	Humbert & Flint	May 15
*BUILDING LAND, ENFIELD—At the Mart	Stanley Parkes & Brown	do.
*BUILDER'S STOCK, PLANT AND MACHINERY, BRAINTREE—On the Premises	Fred. Taylor	May 18
*BUILDING SITE, LONG ACRE—At the Mart	Daniel Watney & Sons	May 21
*CONTRACTOR'S PLANT AND MATERIAL, OLD FORD AND FULHAM—At the Depôts	Fuller, Horsey, Sons, & Cassell	May 26
*FREEHOLD BUILDING LAND, EDMONTON AND ILFORD—At the Mart	Douglas Young & Co.	May 27
*FREEHOLD BUILDING ESTATE, ISLEWORTH—Star and Garter Hotel, Kew Bridge	Cockett & Henderson	May 28

Capital and Labour.

CONDITION OF THE BUILDING TRADES.—Employment in March continued slack. It was better than a month ago, but worse than a year ago. Returns from 754 firms employing 46,628 workpeople at the end of March, show that, compared with a month ago there was an increase of 3·6 per cent. in the total number of workpeople employed. Compared with a year ago, there was a decrease of 16·9 per cent. in London, and of 6·7 per cent. in the provinces. Employment was fair with painters. It was moderate with slaters, who reported a slight improvement compared with a year ago. In other branches employment was worse than a year ago. The percentage of trade union carpenters and joiners unemployed at the end of March was 8·8, as compared with 9·7 a month ago, and 5·6 a year ago, and for plumbers, for the same dates, 12·8, 12·4, and 7·8 respectively.—*Labour Gazette.*

Patents of the Week.

APPLICATIONS PUBLISHED.*

7,457 of 1907.—A. CASEY: *Brick-making Machines.*

This relates to brick-making machines of the type in which the clay to be used is mixed in a suitable pug-mill, and is forced down into moulds or trays fed in succession beneath the mouth of the pug-mill, and consists in the provision of inclined tables or benches with a number of loose rollers on each side of the machine for the purpose of feeding the same with metal trays or boxes, the metal trays to travel down the incline on to each platform; the bricks are dried in the trays to prevent them from being altered in shape.

* All these applications are in the stage in which opposition to the grant of patents upon them can be made.

7,860 of 1907.—H. T. PEBWORTH: *Drawbolt Locks for Windows of Asylums, Prisons, Schools, and the like.*

This relates to the locking of double-hung sliding-sash windows by fixing in the inner casing of the frame a combination of a mortise lock and a dovetailed drawbolt made to slide within the fore-end of the lock, and into notches cut in the stiles of the top and bottom sashes.

10,945 of 1907.—A. CHIPPINDALE: *Compound Catch, Hasp, and Lock for Doors, Gates, and the like.*

This relates to a compound catch, hasp, and lock for doors, gates, and the like, and consists in employing the ordinary plate with a catch towards the bottom in a key-hole slot on which is pivoted the hasp, and at the top part of the plate is fixed a catch having a hole or loop for the reception of a padlock, thus

forming a combined catch, hasp, and lock for fastening and locking the bar, bolt, or latch of any door or gate.

11,763 of 1907.—T. SMELLIE: *A Double-acting Ventilating Apparatus Formed in Sheet-steel or other Metal, Terra-cotta, Brick, or Timber.*

This relates to a square or rectangular tube having an upright division in the centre forming the body of the ventilating apparatus into two equal and distinct passages. The inside of each passage is again divided in its length by a partition lying obliquely and forming an upper and an under tapered space. The outer ends of under spaces are fitted with mica or silk flaps. The under side of ventilating apparatus is open to room or area to be ventilated. Air currents passing across from obverse side through upper space set up a suction in under space, and so drawing the vitiated air from room or area being ventilated; when air passes from reverse side it shuts the mica or silk flap, and passes through the second passage, setting up the same action as took place in the first passage.

12,989 of 1907.—F. ROGERS: *Sash Windows.*

This relates to reversible sash windows of the kind described in specification No. 17,907 of 1900, the windows therein described being fitted with detachable beadings to allow of the sash being reversed, and consists in connecting the loose part of the bead to the frame by hinges which allow of the bead being moved endways, and are provided with headed pins and slots for locking the bead in its closed position, and connecting the sash cords or chains to axles which can rotate and move endways in their bearings on the sashes for forcing the cords or chains out of their grooves in the sides of the sash.

14,025 of 1907.—R. A. BROOKS: *Flushing Valves.*

This relates to a valve mechanism for controlling the flushing of closets, comprising an outer casing communicating with an inlet and an outlet for the flushing fluid and a differential valve communicating with fluid under pressure, and arranged so that the incoming fluid will close and open said valve, and consists in the arrangement whereby a release in the form of a double valve is provided for effecting operation of said differential valve; and wherein means controlled by a fluid other than the flushing fluid are provided for operating the controllable release of said valve; and wherein said double valve is arranged so that initial flushing is prevented until subsequent to actuation or release by the operator of operated parts; and wherein said differential valve is embodied in an inner valve casing secured to said outer casing, and a closure co-operating with a seat formed in said inlet, said inner valve casing having an opening forming a part of said controllable release, and said closure having a restricted passage opening to said inlet; and wherein fluid-controlled means consist of a cup for the controlling fluid and a piston, one of which is movable relatively to the other and connected with said double closure, said piston being provided with means for regulating the flow of said controlling fluid through the piston, and thereby controlling the movement of the movable element.

14,382 of 1907.—D. E. POWELL and A. J. SMITH: *Gully Traps.*

This relates to a gully trap having two water seals, and consists in the formation of the grid in a frame adapted to receive an additional lid which can be separately removed to give access to the second water-seal chamber and the outflow pipe.

26,817 of 1907.—J. D. BICKFORD: *Building Moulds.*

This relates to a mould for columns, beams, and so forth in concrete building construction, characterised by two sections made of parallel strips or staves held together by suitable bolts, and a sleeve of similar construction surrounding the adjoining ends of the two sections so that they can be extended and retracted in the sleeve according to the length of the column or beam to be constructed, by inserting correspondingly shaped staves with undercut or bevelled edges corresponding to the bevelled edges of the second ends held together by the outer sleeve.

28,610 of 1907.—C. H. ADAMS: *Flushing Water-closet Pan.*

This relates to flushing water-closets of the type in which the flushing current is started by creating a partial vacuum in the long limb of the siphon leading from the flushing-tank. According to the invention, the pan is formed with a recess or pocket integral therewith, and communicating with the flushing rim and lower end of the long leg of the discharge siphon leading from the flushing-tank or waste-water preventer. Within said pocket is a piston or bucket furnished with a handle for raising and lowering it; said handle may project through an opening in the top of the pocket, which opening may be furnished if desired with packing means to prevent escape of water thereat. After each discharge of the flushing-siphon the pocket remains full of water up to the level of its outlet. To start the siphon the piston or bucket is raised, thereby lifting the water within the pocket and discharging it into the closet pan. By so doing a partial vacuum is produced in the long leg of the siphon, and the discharge from siphon is thereby started.

28,745 of 1907.—DR. G. SCHRUF: *A Process for the Production of an Artificial Stone and Mortar Impermeable to Water.*

This relates to a process for the production of a moisture-proof artificial stone substance, and a similar mortar, consisting of sand or other "filling" material, cement, tar, or other similar bituminous materials, characterised by the circumstance that the tar or bituminous substances are added in a quantity of at most 10 per cent. for the purpose of imparting to the material a greater strength, together with perfect impermeability to water.

15,434 of 1907.—H. G. BARNHURST and J. W. FULLER, JUN.: *Mode of Producing Cement Clinker in the Manufacture of Cement.*

This relates to a method of producing cement clinker in which finely-divided raw cement materials and finely-divided fuel, both in a dry condition, are intimately mixed together and fed into a rotary kiln at different points, the fuel from one point to fire, and maintain the kiln in a highly-heated condition, and the fuel from the other mixed with the different raw cement materials in non-cohering conditions, to effect by its combustion the perfect or complete clinkering of the grains or particles of the different cement materials added by the products of the separately introduced fuel of the kiln.

SOME RECENT SALES OF PROPERTY:
ESTATE EXCHANGE REPORT.

April 15.—By BOULTON & COOPER (at Hunmanby).

Hunmanby, Yorks.—Cross Hill, farmhouse, cottages, etc., 7½ acres, f.	£630

April 22.—By BAXTER, PAYNE, & LEPPER.

Peckham.—Lyndhurst-rd., f.g. rents 110*l.* 1s. 3d., reversions in 15 to 40 yrs.	4,030
Basing-rd., f.g.r. 20*l.*, reversion in 22 yrs.	640
Victoria-rd., f.g.r. 16*l.*, reversion in 16 yrs.	650
Lee.—Dacre-pk., f.g. rents 51*l.* 10s., reversions in 18 to 25 yrs.	2,360
Blackheath.—Shooter's-hill, f.g.r. 40*l.*, reversion in 16 yrs.	2,200

April 23.—By GREATOREX & CO.

Erith.—16, 17, and 18, Crescent-rd., u.t. 56 yrs., g.r. 5*l.* 11s. 4d., w.r. 58*l.* 10s.	310
Fulham.—1 to 5, Orchard-st., 186, North End-rd., and 2 to 4, Fane-st., u.t. 23¼ yrs., g.r. 36*l.* 5s., w.r. 158*l.* 12s.	500
Kilburn.—Carlton-vale, f.g. rents 118*l.*, reversion in 65 yrs.	2,560
Finchley.—Station-rd., f.g. rents 26*l.* 5s., reversion in 70 yrs.	635
Clapham.—Lansdowne-rd., f.g.r. 7*l.*, reversion in 52 yrs.	180
27, Park-hill, f., y.r. 75*l.*	600

By JOHN M. LEEDER & SON (at Swansea).

Swansea, Glam.—14, Brooklands-ter., u.t. 65 yrs., g.r. 5*l.*, p.	450
9, Rosehill-ter., f., y.r. 22*l.*	400

April 24.—By BEARD & SON.

Westbourne-grove.—No. 198 (s.), u.t. 35 yrs., g.r. 7*l.* 7s., y.r. 80*l.*	615
Bayswater.—73, Hereford-rd., u.t. 42½ yrs., g.r. 8*l.*, e.r. 60*l.*	395
Westbourne Park.—2, Tavistock-rd., u.t. 48 yrs., g.r. 8*l.*, e.r. 65*l.*	410

By W. B. HALLETT.

Brompton-road.—1, 2, and 3, Montpelier-mews, u.t. 27½ yrs., g.r. 14*l.*, w.r. 88*l.* 8s.	470

By STANLEY, PARKES, & BROWN.

Wood Green.—28, Cobham-rd., u.t. 91 yrs., g.r. 6*l.* 2s., e.r. 28*l.*	270

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for office; s. for shops; ct. for court.

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum, and Canada 21s. 8d. (52 numbers) PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, etc., 26s. per annum.

Remittances (payable to J. MORGAN) should be addressed to The Publisher of "THE BUILDER," 4, Catherine-street, W.C.

SUBSCRIBERS in LONDON and the SUBURBS, by prepaying at the Publishing Office 19s. per annum (52 numbers) or 4s. 9d. per quarter (13 numbers), can ensure receiving "The Builder" by *Friday Morning's Post.*

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance. The Editor cannot undertake to read and consider articles offered for acceptance unless they are type-written.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor

MEETINGS.

FRIDAY, MAY 1.

Architectural Association,—Mr. G. W. Eve on "Architectural Heraldry." 7.30 p.m.

Royal Institution,—Professor J. Larmor, M.A., on "The Scientific Work of Lord Kelvin." 9 p.m.

SATURDAY, MAY 2.

Incorporated Association of Municipal and County Engineers.—Home District Meeting, to be held at Wimbledon and Richmond.

Edinburgh Architectural Association.—Visit to St. John's R.C. Church, Portobello.

MONDAY, MAY 4.

Royal Institute of British Architects.—Annual General Meeting. 8 p.m.

Society of Engineers.—Professor R. H. Smith, A.M.I.C.E., etc., on "The Design and Waste and Wear of Wheel Teeth." 7.30 p.m.

TUESDAY, MAY 5.

Society for the Promotion of Hellenic Studies (*Society of Antiquaries' Rooms, Burlington House, W.*).—(1) Professor E. Gardner on "A Statue from an Altic Tomb (The Trentham Statue)." (2) Mr. John H. Baker-Penoyre on "A Fifth Century Relief in Thasos." 5 p.m.

THURSDAY, MAY 7.

Civil and Mechanical Engineers' Society (*Caxton Hall, S.W.*).—Mr. E. F. Etchells on "Abbreviated Formulæ for Structural Engineers." 8 p.m.

Institution of Electrical Engineers (*Royal Society of Arts*).—Mr. G. F. Mansbridge on "The Manufacture of Electrical Condensers." 8 p.m.

SATURDAY, MAY 9.

Incorporated Association of Municipal and County Engineers.—Lancashire and Cheshire District Meeting, to be held at Eccles.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.		
Hard Stocks	1	7	0	per 1000	alongside, in river.
Picked Stocks for Facings	2	10	0	,,	delivered.
Flettons	1	6	0	,,	at railway depôt.
Best Fareham Red	3	12	0	,,	,, ,,
Best Red Pressed Buabon Facing	5	0	0	,,	,, ,,
Best Blue Pressed Staffordshire	3	15	0	,,	,, ,,
Do. Bullnose	4	0	0	,,	,, ,,
Best Stourbridge Fire Bricks	3	14	0	,,	,, ,,
GLAZED BRICKS.					
Best White and Ivory Glazed Stretchers	10	7	6	,,	,, ,,
Headers	9	17	6	,,	,, ,,
Quoins, Bullnose, and Flats	13	17	6	,,	,,
Double Stretchers	15	17	6	,,	,,
Double Headers	12	17	6	,,	,, ,,
One Side and two Ends	16	17	6	,,	,, ,,
Two Sides and one End	17	17	6	,,	,, ,,
Splays, Chamferred, Squints	15	10	0	,,	,, ,,
Best Dipped Salt Glazed Stretchers	10	7	6	,,	,, ,,
Headers	9	17	6	,,	,, ,,
Quoins, Bullnose, and Flats	13	17	6	,,	,, ,,
Double Stretchers	15	17	6	,,	,, ,,
Double Headers	12	17	6	,,	,, ,,
One Side and two Ends	16	17	6	,,	,, ,,
Two Sides and one End	17	17	6	,,	,, ,,
Splays, Chamferred, Squints	15	10	0	,,	,, ,,

BRICKS, &c. (*continued*).

GLAZED BRICKS (*continued*)—

	£ s. d.	
Second Quality White and Dipped Salt Glazed	1 5 0	per 1000, at railway depôt. „ less than best.
	s. d.	
Thames and Pit Sand	6 6	per yard, delivered.
Thames Ballast	5 0	„ „
Best Portland Cement	28 0	per ton, „
Best Ground Blue Lias Lime	19 0	„ „

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	„ „

PORTLAND STONE (20 ft. average)—

Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 1	„ „
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 2½	„ „

	s. d.	
Ancaster in blocks	1 10	per ft. cube, deld. rly. depôt.
Beer „	1 6	„ „
Greenshill „	1 10	„ „
Darley Dale in blocks	2 4	„ „
Red Corsehill „	2 2	„ „
CloseburnRed Freestone	2 0	„ „
Red Mansfield „	2 4	„ „

YORK STONE—*Robin Hood Quality.*

	s. d.	
Scappled random blocks	2 10	„ „
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super., „
6 in. rubbed two sides ditto, ditto	2 6	„ „
3 in. sawn two sides slabs (random sizes)	0 11½	per ft. cube „
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	„ „
1½ in. to 2 in. ditto, ditto	0 6	„ „

HARD YORK—

Scappled random blocks	3 0	„ „
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8	per ft. super. „
6 in. rubbed two sides ditto	3 0	„ „
3 in. sawn two sides slabs (random sizes)	1 2	„ „
2 in. self-faced random flags	0 5	„ „

SLATES.

In.	In.	£ s. d.	
20×10	best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20×12	„ „	13 17 6	„ „
20×10	first quality „	13 0 0	„ „
20×12	„ „	13 15 0	„ „
16×8	„ „	7 5 0	„ „
20×10	best blue Portmadoc	12 12 6	„ „
16×8	„ „	6 12 6	„ „
20×10	best Eureka unfading green	15 17 6	„ „
20×12	„ „	18 7 6	„ „
18×10	„ „	13 5 0	„ „
16×8	„ „	10 5 0	„ „
20×10	permanent green	11 12 6	„ „
18×10	„ „	9 12 6	„ „
16×8	„ „	6 12 6	„ „

TILES.

	s. d.	
Best plain red roofing tiles	42	0 per 1000 at rly. depôt.
Hip and Valley tiles	3	7 per doz. „
Best Broseley tiles	50	0 per 1000 „
Do. Ornamental tiles	52	6 „ „
Hip and Valley tiles	4	0 per doz. „
Best Ruabon red, brown, or brindled do. (Edwards)	57	6 per 1000 „
Do. Ornamental do.	60	0 „ „
Hip tiles	4	0 per doz. „
Valley tiles	3	0 „ „
Best Red or Mottled Staffordshire do. (Peakes)	51	9 per 1000 „
Do. Ornamental do.	54	6 „ „
Hip tiles	4	1 per doz. „
Valley tiles	3	8 „ „
Best "Rosemary" brand plain tiles	48	0 per 1000 „
Best Ornamental tiles	50	0 „ „
Hip tiles	4	0 per doz. „
Valley tiles	3	8 „ „
Best "Hartshill" brand plain tiles, sand-faced	50	0 per 1000 „
Do. pressed	47	6 „ „
Do. Ornamental do.	50	0 „ „
Hip tiles	4	0 per doz. „
Valley tiles	3	6 „ „

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13 10 0	... 15 0 0
Deals: best 3 by 9	13 0 0	... 14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	... 12 0 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.
Battens: seconds	0 10 0	„ „
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	... 10 0 0
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	... 9 10 0
Foreign Sawn Boards—1 in. and 1½ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	„

WOOD (*continued*).

BUILDING WOOD (*continued*)—	At per load of 50 ft. £ s. d.	£ s. d.
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	... 5 0 0
Seconds	4 0 0	... 4 10 0
Small timber (8 in. to 10 in.)	3 12 6	... 3 15 0
Small timber (6 in. to 8 in.)	3 0 0	... 3 10 0
Swedish balks	2 10 0	... 3 0 0
Pitch-pine timber (30 ft. average)	4 0 0	... 4 15 0

JOINERS' WOOD.	At per standard. £ s. d.	£ s. d.
White Sea: first yellow deals, 3 in. by 11 in.	24 0 0	... 25 0 0
3 in. by 9 in.	22 0 0	... 23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	... 18 0 0
Second yellow deals, 3 in. by 1 in.	18 10 0	... 20 0 0
„ „ 3 in. by 9 in.	17 10 0	... 19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	... 14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	... 15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	... 12 0 0
Petersburg first yellow deals, 3 in. by 11 in.	21 0 0	... 22 10 0
Do. 3 in. by 9 in.	18 0 0	... 19 10 0
Battens	13 10 0	... 15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	... 17 0 0
Do. 3 in. by 9 in.	14 10 0	... 16 0 0
Battens	11 0 0	... 12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	... 14 0 0
Do. 3 in. by 9 in.	12 10 0	... 14 0 0
Battens	10 0 0	... 11 0 0
White Sea and Petersburg—		
First white deals, 3 in. by 11 in.	14 10 0	... 15 10 0
„ „ 3 in. by 9 in.	13 10 0	... 14 10 0
Battens	11 0 0	... 12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	... 14 10 0
„ „ 3 in. by 9 in.	12 10 0	... 13 10 0
Battens	10 0 0	... 11 0 0
Pitch-pine: deals	18 0 0	... 21 0 0
Under 2 in. thick extra	0 10 0	... 1 0 0
Yellow pine—First, regular sizes	44 0 0	upwards.
Oddments	32 0 0	„
Seconds, regular sizes	33 0 0	„
Oddments	28 0 0	„
Kauri Pine—Planks, per ft. cube	0 3 6	... 0 5 0
Danzig and Stettin Oak Logs—		
Large, per ft. cube	0 3 0	... 0 3 6
Small „ „	0 2 6	... 0 2 9
Wainscot Oak Logs, per ft. cube	0 5 6	... 0 6 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 8½	... 0 0 9½
¾ in. do. do.	0 0 7	... —
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	... 0 1 0
Selected, Figury, per ft. super. as inch	0 1 6	... 0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10	... 0 1 0
Teak, per load	17 0 0	... 22 0 0
American Whitewood Planks, per ft. cube	0 4 0	... 0 5 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	... 0 17 0
1 in. by 7 in. yellow, planed and matched	0 14 0	... 0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	... 1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	... 0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	... 0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	... 0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	... 0 13 6
1 in. by 7 in. „ „	0 14 0	... 0 18 0
¾ in. by 7 in. white „ „	0 10 0	... 0 11 6
1 in. by 7 in. „ „	0 12 9	... 0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	7 0 0	... 7 10 0
Compound Girders, ordinary sections	9 0 0	... 10 0 0
Steel Compound Stanchions	11 0 0	... 12 0 0
Angles, Tees, and Channels, ordinary sections	9 0 0	... 10 0 0
Flitch Plates	9 0 0	... 9 10 0
Cast Iron Columns and Stanchions including ordinary patterns	7 10 0	... 8 10 0

METALS.

IRON—	Per ton, in London. £ s. d.	£ s. d.
Common Bars	8 10 0	... 9 0 0
Staffordshire Crown Bars, good merchant quality	8 15 0	... 9 5 0
Staffordshire "Marked Bars"	10 10 0	... —
Mild Steel Bars	8 15 0	... 9 5 0
Hoop Iron, basis price	9 5 0	... 9 10 0
„ „ Galvanised	17 0 0	... —

(*And upwards, according to size and gauge.)

Sheet Iron Black—		
Ordinary sizes to 20 g.	9 15 0	... —
„ „ 24 g.	10 15 0	... —
„ „ 26 g.	12 5 0	... —
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 0 0	... —
Ordinary sizes to 22 g. and 24 g.	15 10 0	... —
„ „ 26 g.	16 10 0	... —
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	18 0 0	... —
„ „ 22 g. and 24 g.	18 10 0	... —
„ „ 26 g.	20 0 0	... —
Galvanised Corrugated Sheets—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	14 10 0	... —
„ „ 22 g. and 24 g.	14 15 0	... —
„ „ 26 g.	16 5 0	... —
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12 0 0	... —
Best Soft Steel Sheets, 22 g. & 24 g.	13 0 0	... —
„ „ 26 g.	15 0 0	... —
Cut Nails, 3 in. to 6 in.	10 10 0	... 11 0 0

(Under 3 in., usual trade extras.)

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up.	16 10 0	... —
Pipe in coils	17 0 0	... —
Soil pipe	19 10 0	... —
Compo pipe	20 10 0	... —
ZINC—Sheet—		
Vieille Montague ton	28 10 0	... —
Silesian	28 5 0	... —
COPPER—		
Strong Sheet per lb.	0 1 1	... —
Thin „ „	0 1 2	... —
Copper nails „	0 0 11	... —
Copper wire „	0 0 10	... —
BRASS—		
Strong Sheet „	0 1 0	... —
Thin „	0 1 1	... —
TIN—English Ingots „	0 1 4	... —
SOLDER—Plumbers' „	0 0 7	... —
Tinmen's „	0 0 9	... —
Blowpipe „	0 0 11	... —

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

15 oz. thirds	2½d.	per ft. delivered.
„ fourths	1⅝d.	„ „
21 oz. thirds	3½d.	„ „
„ fourths	2⅜d.	„ „
26 oz. thirds	4½d.	„ „
„ fourths	3½d.	„ „
2 oz. thirds	5d.	„ „
„ fourths	4½d.	„ „
Fluted Sheet, 15 oz.	3⅜d.	„ „
„ 21 oz.	4½d.	„ „

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

⅛ Hartley's	2½d.	per ft. delivered.
3/16 „	2⅝d.	„ „
¼ „	2⅞d.	„ „
Figured and Oxford Rolled "Oceanic" Glass, white	4d.	„ „
„ „ tinted	5½d.	„ „
OTHER GLASS—		
"Arctic" Glass, white	4d.	„ „
„ „ tinted	5½d.	„ „
„ „ ruby and opalescents	1s.	„ „

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 1 11
„ „ „ in barrels	„	0 2 0
„ „ „ in drums	„	0 2 2
Boiled „ „ in pipes	„	0 2 1
„ „ „ in barrels	„	0 2 2
„ „ „ in drums	„	0 2 4
Turpentine in barrels	„	0 2 11
„ in drums	„	0 3 1
Genuine Ground English White Lea	per ton	22 10 0
Red Lead, Dry	„	22 0 0
Best Linseed Oil Putty	per cwt.	0 7 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 0
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 9
French and Brush Polish	0 10 6

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

*** Denotes *accepted.* † Denotes *provisionally accepted.***

BARNET.—For making a borehole, including test pumping, at the workhouse, for the Guardians. Mr. J. C. Melliss, M.Inst.C.E., 264, Gresham House, Old Broad-street, E.C.:—

T. Tilley & Sons, Ltd., Walbrook Works, 451 to 455, Cambridge-road, London, E. £450 7 6

BEARPARK.—For building the United Methodist Church. Mr. A. T. B. Kell, architect and surveyor, 61A Fron-street, Chester-le-street:—

H. Meredith, Auton Stile (nr Durham)* £638 11 6

BRANKSOME (Dorset).—For erecting new Liberal Club premises and hall. Messrs. Smart & Wyeth, architects and surveyors, Bank-chambers, Ashley-road, Upper Parkstone:—

A. & F. Wilson	£3,450 0	H. W. King	£2,860 0
F. Maddeford	3,445 0	J. Hillman	2,834 0
G. Harding	3,380 0	W. J. Crop	2,827 0
J. G. Norman	3,329 14	S. Brown & Sons Westbourne*	2,735 0
J. H. Wilson	3,325 0		
Burton	3,252 0		

[Architects' estimate £2,758.]

BURRADON.—For alterations and additions to Burradon and District Social Club, for the Burradon and District Social Club, Ltd. Messrs. White & Stephenson, architects, 59, Grey-street, Newcastle. Quantities by the architects :—

V. C. Hope	£916 2 4	C. R. Carter ..	£760 0 0
Killah & Carr ..	903 0 0	Johnson&Brown	755 1 0
E. T. George ..	839 0 0	T. Clements....	690 0 0
W. Jackson....	835 0 0	T. Patterson Killingworth *	685 0 0
W. Ayton	804 19 0	A. Grey	675 0 0
R. & A. P. Tait	770 15 6		

CAMBERLEY.—For new sewer, Pine Woods Estate, Camberley, Surrey. Messrs. Smart & Wyeth, architects and surveyors, Bank-chambers, 220, Ashley-road, Parkstone, Dorset. Quantities by surveyors :—

Kavanagh & Co.	£641 13 10	Grounds & Newton	£353 13 4
H. C. Brixey ..	465 8 0	F.Osman,Southampton*	333 0 0
Turner	457 9 5		

[Surveyors' estimate, £340 9s. 6d.]

CANTON (Cardiff).—For woodblock paving in Cowbridge-road, for the Corporation :—

Acme Wood Paving Co., Ltd (1904), London‡ £4,417 12 9

‡Recommended for acceptance by the Council.

CHOPWELL.—For erecting shops, warehouse, etc. Mr. D. M. Spence, architect and surveyor, Shotley-bridge :—

E. T. George, Newcastle-on-Tyne £770

COUNDON.—For erecting a minister's house, for the trustees of the Shildon Primitive Methodist Circuit, near Bishop Auckland. Mr. J. Walton Taylor, F.R.I.B.A., Newcastle-on-Tyne :—

J. F. Adamson & Sons	£608 0	G. W. Hetherington	£555 0 0
A. Brown.....	595 0	W. Hope & Sons	542 18 0
I. Hetherington ..	570 16	T. Atkinson....	495 0 0
W. Hudson	562 0	F. Sowerby, Coundon* ..	439 16 8
Robson & Gargett	557 0		

DINAS POWIS (Glam.).—For the erection of a new Council school at Dinas Powis, for the Glamorgan Education Committee. Mr. D. Pugh-Jones, County Architect, Cardiff :—

D. W. Davies, Morgan-chambers, Cardiff* .. £2,534

EDLESBOROUGH. — For proposed new Council school, Dagnall (accommodation 60), for Bucks County Education Committee. Mr. C. H. Riley, Architect, County Hall, Aylesbury :—

G. Whitman	£1,051
G. B. Putt & Son	879
Atkins & Baldwin	797
J. Honour & Son.....	756
T. Yirrell, Leighton Buzzard*	732

ENFIELD.—For making-up Allen's-road and Church-road (part of), Ponders End, for the Urban District Council. Mr. R. Collins, Surveyor, Public Offices, Enfield, Middlesex :—

Hampstead & Co.....	£1,861 17 4	Jennings & Grenfell	£1,056
Dykes	1,713 0 0	E. J. Betts, Enfield-highway*	970
Webster	1,269 0 0		
G. Bell & Sons	1,262 0 0		

EXETER. — For new laboratory, corridors, art, cookery and classrooms, etc., at the Middle School for Girls, Pennsylvania-road, for the Governors of the Exeter Episcopal Schools Trust. Mr. J. Jerman, F.R.I.B.A., 1, Bedford-circus, Exeter :—

Wakeham Bros	£4,124 0	Stephens & Son	£3,711 0
Woodman & Son	3,930 10	W. Brealy	3,699 0
W. E. Blake....	3,924 0	Ham & Passmore	3,693 0
Luscombe & Son	3,888 0	Westcott, Austin & White	3,649 0
Dart & Francis	3,847 0	G. Setter	3,640 0
J. Triggs	3,783 0	Baker Bros., Exeter*.....	3,435 0
E. Mudge	3,756 0		
G. Herbert	3,740 10		
W. G. Coles	3,720 12		

[Architect's estimate, £3,420.]

FINCHLEY.—For making-up of private streets (Hendon-avenue, Stanhope-avenue, etc.), for the Urban District Council :—

Hendon-avenue.

Mr. W. Iles, Southend-on-Sea* £2,230 0 0

Stanhope-avenue.

Mr. W. Iles, Southend-on-Sea 2,090 0 0

New Oak-road.

Mr. O. T. Gibbons, Leytonstone, S.E.* 559 19 3

Birkbeck-road.

Mr. O. T. Gibbons, Leytonstone, S.E. 660 12 0

Leggatt-grove.

Mr. O. T. Gibbons, Leytonstone, S.E. 603 8 1

FYVIE.—For additions and alterations to public school for the School Board. Messrs. Kelly & Nicol, architects, 367, Union-street, Aberdeen :—

Masons : P. Christie & Son, Turriff*	£635 5 0
Carpenter : W. Auld, Ellon*	446 0 0
Plumbers : I. Blaikie & Sons, Aberdeen*.....	183 5 0
Plasterers : J. Bannochie & Sons, Aberdeen*	151 15 7
Glazier : W. Auld, Ellon*	15 3 0
Slater : J. P. Pirie, Fyvie*	75 12 0

HAMPSTEAD.—For the addition of a packing and receiving-room to the laundry at the North-Western Fever Hospital, Law-road, N.W., for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief :—

Martin, Wells, & Co., Ltd.	£908
Mattock & Parsons	736
J. & W. Drake	734
A. Roberts & Co., Ltd.	710
P. Wilson & Co.....	696
J. Willmott & Sons	690
General Building Co.	665
W. Reason, 47, Rosebery-avenue, E.C.* ..	629

HIGH WYCOMBE.—For new showroom and store, for Messrs. Joynson & Holland, chair manufacturers. Messrs. Hooper & Nash, architects, Church-street, High Wycombe. Quantities by architects :—

G. Smith	£359 0 0	G. Nash.....	£302 0 0
J. Steevens & Son	326 0 0	A. W. Morton Wycombe‡ ..	271 0 0
J. Nash & Sons..	318 0 0		
F. Clarke	310 0 0		

‡Accepted subject to deductions.

HIGH WYCOMBE.—For bakehouse, etc., for Mr. Lacey. Messrs. Hooper & Nash, architects, Church-street, High Wycombe :—

C. H. Hunt& Son	£263 0 0	A. W. Morton..	£211 0 0
G. Smith	262 0 0	G. H. Gebson, High Wycombe*.....	209 0 0
J. Steevens&Son	250 0 0		
J. Nash & Sons	238 0 0		
G. Nash	234 17 6		

HIGH WYCOMBE.—For new rooms and outoffices, Tylers Green, Penn, Bucks, Primitive Methodist Chapel, for the Trustees. Messrs. Hooper & Nash, architects, Church-street, High Wycombe :—

F. Perfect	£250 0	J. Nash & Sons ..	£205 0
G. Nash	245 10	G. Wheeler, Tylers Green*	197 10
J. Steevens & Son	215 0		

HULL.—For alterations and additions to the Boulevard Secondary School, for the Education Committee. Mr. Joseph H. Hirst, City Architect, Town Hall, Hull. Quantities by City Architect :—

H. T. Arnott	£2,798 0 0
G. Houlton & Son	2,450 0 0
T. Goates.....	2,245 0 0
F. Southern.....	2,178 0 0
G. Jackson & Sons.....	2,148 16 6
M. Harper	2,079 9 0
Hull General Builders Ltd.	1,982 12 10
F. Singleton, Blenkin-street*	1,980 0 0

ILFORD.—For erecting a Public Elementary School on a site fronting Green-lane and Airthrie-road, Goodmayes, for the Urban District Council. Mr. C. J. Dawson, F.R.I.B.A., 11, Cranbrook-road, Ilford :—

J. S. Hammond & Son, Romford £16,315

LEATHERHEAD. — For rebuilding of business premises, High-street, Leatherhead, for Mr. S. Mould. Mr. C. Osenton, architect and surveyor, North-street, Leatherhead :—

First Contract.

Child	£3,376	Cropley	£2,255
Tout	2,620	Higgs	2,230
Faux	2,469	Cummings*	2,149
Brown	2,392	Johnson‡	1,778

‡Withdrawn.

LEEHOLME.—For Primitive Methodist schoolroom, Leeholme, near Bishop Auckland. Mr. George Race, architect, Westgate, Weardale :—

Whole Tender.

T. Manners	£899 0 0

All Excepting Plumbing.

W. Hope & Sons	853 1 0

Mason Work and Plastering.

F. Sowerby	461 0 0

Mason Work.

G. H. Bell.....	438 10 0
Robson & Gargett	395 0 0
Douglas & Angus.....	360 0 0

Mason Work, Joinery, and Plastering.

W. Hudson, Bishop Auckland*.....	706 0 0

Joiner Work.

J. F. Adamson & Sons	298 10 0

Slating.

J. & R. Mascall, Bishop Auckland* ..	57 3 0

Painting.

J. Pallister	29 12 0
A. Coates, Shildon*.....	21 0 0

Plastering.

S. Kirby	50 0 0

Plumbing.

H. Foster & Sons.....	54 0 0
S. Tillotson.....	48 0 0
J. J. Spoor & Son.....	44 10 0
E. Thompson	41 18 0
W. Kilburn, Ltd., Bishop Auckland*..	37 17 6

LEAVESDEN.—For overhauling and renewing soft water engines and pumps at schools, Leavesden, near Watford, for the St. Pancras Guardians :—

T. & J. Hoskins, Ltd.	£96 15	Priddle & Heppell	£75 12
R. Cort & Son	86 10	G. S. De Ritter....	66 10
Hunter & English, Ltd.	85 0	T. W. Brock	65 15
		C. Whitaker & Co., Bradford*	52 10

LEICESTER. — For Nurses' Home, Leicester Infirmary. Messrs. Everard, Son, & Pick, architects and engineers, Leicester :—

J. E. Johnson & Son	£20,000 0	Bowles & Sons..	£18,900 0
T. Herbert	19,298 0	J. Bentley & Co.	18,710 0
W. Moss & Sons Ltd.	19,251 0	Clark & Garrett	18,710 0
J. & C. Kellett & Son	19,200 0	Bradshaw Bros.	18,660 5
Tyers & Yates..	19,175 0	A.&W.Chambers	18,575 0
Haskard, Rudkin & Beck	18,967 0	J. Hutchinson & Son	18,399 0
E. Fox	18,950 0	J. Chapman....	18,343 0
		H. Herbert & Sons*	18,320 0

LICHFIELD. — For the erection of power-house carpenters' shops and other estate buildings at Swinfen Hall, near Lichfield, for Colonel M. A. Swinfen Brown. Mr. C. M. C. Armstrong, architect, 5, High-street, Warwick :—

T. Broad & Co., Ltd.	£1,764	W. J. Whittall & Son	£1,529
G. F. Smith & Sons	1,600	G. Hodges, Burton-on-Trent*	1,425
J. Parnell & Son ..	1,580		
I. Lowe & Sons....	1,561		

LONDON.—For repairing and overlaying with teak certain ward floors, etc., at the South-Western Fever Hospital, Landor-road, Stockwell, S.W., for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief :—

W. J. Coleman & Co.	£1,500 0 0
British Flooring Co.....	785 15 0
Howard & Sons, Ltd.	652 8 0
A. Roberts & Co., Ltd.	415 0 0
Parquet Floor Renovating Co.	400 0 0
Higgs & Hill, Ltd.	398 0 0
General Building Co.	395 0 0
Damman & Co.	395 0 0
Ellis, Geary, & Co., 50, Cannon-street, E.C.*	340 0 0

LONDON.—For repairs and alterations at 60, Stanhope-gardens, South Kensington, for the Executors of the late Robert Morris. Mr. W. R. Lawrence, F.S.I., architect and surveyor, 57 and 58, Chancery-lane, London, W.C. :—

Rawlings Bros., Ltd.	£1,085	Johnson, Saul, & Co. .	£981
Simmonds Bros., Ltd.	1,035	Aldin Bros. & Davies	953

LONDON.—For the installation of electric lighting at the South-Western Hospital Ambulance Station, Landor-road, Stockwell, S.W., for the Metropolitan Asylum Board. Mr. W. T. Hatch, Engineer-in-Chief :—

Cox-Walkers, Ltd.	£5,995 0	G. Weston & Sons	£4,368 0
J. H. Taylor & Co.	5,899 0	Pinching & Walton.....	4,157 12
Laing, Wharton & Cunnington	5,750 0	Tilley Bros.	4,095 0
F. A. Glover & Co., Ltd.	5,700 0	Lund Bros., & Co.	3,980 0
A. C. Smith, Engineer (Lincoln), Ltd.	4,956 16	Tamplin & Makovski, Ltd.	3,926 0
T. Potter & Sons, Ltd.	4,866 0	J. S. Anderson..	3,900 0
Wenham & Waters, Ltd...	4,741 0	H. & C Davis & Co., Ltd.....	3,833 0
H. J. Godfrey ..	4,735 0	W. Barton&Sons	3,825 0
A. & U. Arthur	4,685 0	H. J. Cash & Co., Ltd.	3 819 0
W.G. Cannon & Sons, Ltd.....	4,560 10	G. E. Taylor&Co.	3,787 0
Perry & Co....	4,486 0	C. Pullan (informal)	3,721 16
A. Hawkins & Sons	4,475 0	The Electrical Co., Ltd.....	3,700 0
		W. J. Fryer & Co., Bravington Works, Paddington*	3,434 0

LEYTON.—For cleansing, painting, and repairs to three schools, and repairs and redressing of tar-paving to playgrounds, for the Education Committee. Mr. W. Jacques, A.R.I.B.A., 2, Fen-court, Fenchurch-street, E.C. —

Painting.

—	Harrow Green (Exterior and New Windows).	Connaught-road, Temporary (Exterior).	Sybourn-street, Temporary (Exterior).
	£ s. d.	£ s. d.	£ s. d.
E. Burns & Co.....	—	69 10 0	62 19 0
M. Calnan & Son	197 0 0	62 0 0	62 0 0
W. J. Clemens, Stratford	*141 10 0	99 18 0	94 15 0
F. J. Coxhead	153 0 0	97 0 0	77 0 0
Davis & Cocks	—	60 0 0	56 0 0
J. Fenn Scott	237 14 6	99 18 0	109 13 0
H. C. Horswill	148 0 0	95 0 0	84 0 0
J. W. Jerram	168 0 0	87 0 0	77 0 0
L. Kazak	175 0 0	78 10 0	74 0 0
C. J. Kemp	—	85 10 0	74 10 0
Runham Brown Bros.....	158 0 0	79 0 0	63 0 0
E. A. Russell	186 0 0	124 0 0	128 0 0
A. E. Symes.....	157 0 0	—	—
Vigor & Co.	221 15 0	83 0 0	75 0 0
Wood Bros.	—	—	—
Woollaston Bros.....	161 0 0	65 0 0	62 10 0
Woollaston & Co., Limehouse	179 0 0	*59 0 0	*56 0 0

For redressing tarpaving of Playgrounds.

—	Cann Hall.	Church-road.	Cobbold-road.	Downsell-road.	Lea Bridge.	Maywith-road.	Newport-road.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Chittenden & Simmons	19 17 6	43 13 10	14 18 1	35 19 0	10 13 2	37 13 3	36 11 9
Constable, Hart, & Co., City	24 15 0	39 10 0*	18 15 0	36 0 0	15 0 0	29 10 0	29 0 0*
Field & Co., Herts	19 2 0*	45 1 8	13 2 5*	32 9 6*	8 0 3*	28 6 8	30 8 3
Hobman & Co., South Bermondsey.....	21 6 0	53 5 6	15 15 0	34 0 0	10 10 0	28 0 0*	37 15 0
Wainwright & Co.	25 11 5	44 18 9	20 16 6	40 16 6	16 10 0	32 16 11	37 7 6

LONDON.—For rebuilding first portion of the Stepney and Bow Foundation Boys' School, Bow, E., for the Coopers' Company. Messrs. T. P. Figgis, F.R.I.B.A., and A. E. Munby, M.A., A.R.I.B.A., joint architects, 28, Martin's-lane, E.C. Quantities by Messrs. Gleed & Belcher, 8 and 9, Martin's-lane, E.C.:—

W. Lawrence & Son, Ltd.	£22,144	Perry & Co.	£20,667
McLaughlin & Harvey, Ltd.	21,887	Kilby & Gayford	20,573
Bywaters & Sons, Ltd.	21,350	E. Lawrance & Sons	20,571
J. Simpson & Son	21,330	Holliday & Greenwood	20,570
W. J. Fryer & Co.	21,300	J. Chessum & Sons	20,567
G. E. Wallis & Sons, Ltd.	20,936	Kerridge & Shaw	20,476
J. Grover & Son	20,858	Holloway Bros., Ltd.	20,200
		J. Smith & Sons*	20,140

NORWICH.—For painting (externally) various schools, for the Education Committee. Mr. C. J. Brown, architect and surveyor, Cathedral-offices, The Close, Norwich:—

Colman-road School.
A. Taylor, Onley-street, Norwich £17 0 0

Crooks-place School.
F. R. Hipperson, Northumberland-street, Norwich £45 0 0

Duke-street Municipal School.
F. R. Hipperson, Northumberland-street, Norwich £43 15 0

Horns-lane School.
Butler & Chaptman, Thorpe St. Andrew, Norwich £38 5 0

Philadelphia-lane School.
G. Marshall, Heath-road, Norwich.... £18 10 0

St. Augustine's School.
G. Marshall, Heath-road, Norwich.... £48 10 0

Surrey-road School.
T. Horth, Magdalene-street, Norwich £41 0 0

OVERSEAL.—For laying a 9-in. pipe sewer and construction of tanks and filter, for the Hartshorne and Seals Rural District Council. Mr. A. Lewis, Surveyor, Packington-road, Ashby-de-la-Zouch. Quantities by Surveyor:—
Slater & Harrison, Overseal, Ashby-de-la-Zouch* £334 4 7

PEOVER.—For widening bridge which carries Bate Mill-road over the stream which divides Peover Superior and Lower Withington, for the Macclesfield Rural District Council:—
J. Benson, Lower Withington (nr. Crewe)* £55 3 0

PONTYCYMMER.—For the erection of a Higher Elementary School at Pontycymmer, Glamorgan, for the Glamorgan Education Committee. Mr. D. Pugh-Jones, County Architect (E. Div.), Cardiff. Quantities by the County Architect:—
Longhor & Co., Pontycymmer, Glamorgan* £7,746 7 6

PONTYPRIDD.—For lane at rear of Richard-street and Cilfynydd-road, for the Urban District Council. Mr. P. R. A. Willoughby, A.M.Inst.C.E., Muncipal-buildings, Pontypridd:—
W. Davies, Hopkenstown, Pontypridd* £100 15 11

PONTYWAEN (Glam.). — For the erection of a temporary school at Pontywaney, W. Rhymney, for the Glamorgan Education Committee. Mr. D. Pugh-Jones, County Architect, Cardiff:—
D. Davies, Donald-street, Cardiff* £953

PWLLGWAUN.—For private street works, Vaughan-street, for the Pontypridd Urban District Council. Mr. P. R. A. Willoughby, A.M.Inst.C.E., Municipal-buildings, Pontypridd:—
A. G. Collins & Co., Barry* £164 11

ROTHWELL (near Leeds).—For painting the exterior woodwork of the Isolation Hospital, for the Committee:—

C. Fenton	£40 14	A. B. Dykes	£30 0
A. & G. Barker	39 0	T. E. Knowles, Lady Pit-lane	
W. Grisdale & Sons	37 10	Leeds*	24 0
Green & Musk	35 0		

RUARDEAN HILL.—For alterations and additions at Ruardean Hill Council School, for Gloucestershire Education Committee. Mr. R. S. Phillips, Architect, Midland Bank-chambers, Gloucester. Quantities not supplied:—

H. Woolley & Son	£300	E. J. Flewelling, Lydbrook*	£210
W. E. Lewis	215		

SENGHENYDD (Glam.). — For the erection of additions to the Council schools, for the Glamorgan Education Committee. Mr. D. Pugh-Jones, County Architect (E. Div.), Cardiff:—
Davies & Lloyd, Senghenydd, near Cardiff* £2,600

SHEFFIELD.—For painting works, Norfolk Market Hall, for the Corporation. Mr. Charles F. Wike, City Engineer, Town Hall, Sheffield:—
Simpson & Melling, Sheffield* £275 9 6

SPEEN (Bucks). — For erecting pair of houses, for Mr. F. D. Ridgley. Messrs. Hooper & Nash, architects, Church-street, High Wycombe:—

J. Nash & Sons	£573 0 0	G. Smith	£470 0 0
G. H. Gebson	572 0 0	A. W. Morton, Wycombe*	415 0 0
G. Biggs & Son	520 0 0		
G. Nash	508 0 0		

STOWELL.—For sinking and lining a dug well, 125 ft. deep, between Templecombe and Milborneport-stations, for the Wincanton Rural District Council. Mr. W. Phelps, C.E., Charlton-road, Shepton Mallet:—
The New England Boring Co. Ltd., Peterborough £235 0 0

STRATFORD-ON-AVON.—For the erection of a house at St. Gregory's-road, Stratford-on-Avon, for Mr. J. J. Nason, M.B. Mr. A. H. Callaway, architect, Union-chambers, Stratford-on-Avon. Quantities by architect:—

J. G. Fincher & Co.	£1,700	Price & Sons	£1,655
Whateley & Sons	1,675	J. Harris & Sons*	1,575

[All of Stratford.]

TALBOT LLANTRISSANT.—For the erection of a new Council school, for the Glamorgan Education Committee. Mr. D. Pugh-Jones, County Architect (E. Div.), Cardiff. Quantities by the County Architect:—
P. Gayland, Bridgend, Glamorgan* £3,875

UPPER BOAT.—For restoration of Tymaen House, Taff Vale. Messrs. R. England & Son, architects, Oxford:—

G. Davies	£348 17 6	J. B. Mundy, Taff's Well*	£220 0 0

WIGAN.—For sewage disposal works, for the Corporation. Mr. W. Bolton, Borough Engineer, King-street West, Wigan:—
Widnes Foundry Co., Ltd., Widnes, £34,775 6s., for 27 in. and 36 in. cast-iron pipes; £9 15s. per ton, for special pipes required.

WINWICK.—For the construction of sewage outfall works and laying sewers, for the Daventry Rural District Council. Mr. C. Russell Hall, engineer, Congleton, Cheshire:—
W. W. Webster, Guilsborough, Northampton* £368 1 1

Ham Hill Stone.
Doulting Stone.
Portland Stone.
The Ham Hill and Doulting Stone Co., Limited
(incorporating the Ham Hill Stone Co. and C. Trask & Son, The Doulting Stone Co.).
Norton, Stoke-under-Ham, Somerset.
London Agent:—Mr. E. A. Williams, 16, Craven-street, Strand.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co.

SPRAGUE & CO.'S, Ltd.,
"INK-PHOTO" PROCESS,
4 & 5, East Harding-street,
Fetter-lane, E.C.

ALEXR. FINDLAY & CO., LTD.,
MOTHERWELL, SCOTLAND.
STEEL ROOF and BRIDGE BUILDERS, STRUCTURAL ENGINEERS.
SPECIALTY, ALL KINDS OF
HYDRAULIC PRESSED STEEL TROUGH FLOORING
For Road and Railway Bridges, Buildings, etc.
LONDON OFFICE: 9, VICTORIA STREET, S.W.

GRICE & CO., Ltd., STONE MERCHANTS,
ADDISON WHARF, 191, Warwick Rd., KENSINGTON.
Building & Monumental Stone
A LARGE STOCK OF BEST
CAEN Stone & Alabaster For HOME TRADE and EXPORT
in Block, Slab, and Scantling.

J. J. ETRIDGE, Jr.
SLATE MERCHANT,
SLATER & TILER.
Penrhyn-Bangor,
Oakeley-Portmadoc.
BEST WORK ONLY.
Red Sandfaced Nibbed Roofing Tiles always in Stock.
Applications for Prices, etc., to
BETHNAL GREEN SLATE WORKS,
Bethnal Green, London, E.

ASPHALTE
For Horizontal & Vertical Damp Courses.
For Flat Roofs, Basements, & other Floors.
Special attention is given to the above by
THE
French Asphalte Co.
CONTRACTORS TO
H.M. Office of Works, The School Board for London, &c.
For estimates, quotations, and all information apply at the Offices of the Company.
5, LAURENCE POUNTNEY HILL,
CANNON STREET, E.C.

"Drop Dry" Glazing
ECONOMICAL, EFFECTIVE. THE PERFECT SELF-SUSTAINING BAR.
Copper & Zinc Roofing.
The most Efficient and Economical System in the Kingdom.
Designs and Estimates Free on Application.
Telegraphic Address: "COURTEOUS, LONDON."
F. BRABY & CO., LTD.
Telephone: 457 North (3 lines).
Chief Offices: 352-364, EUSTON ROAD, LONDON, N.W.
Works: LONDON, LIVERPOOL, BRISTOL, GLASGOW, FALKIRK.

1908.

ne.
ne.
ne.
Co., Limited
Trask & Son,

nerset.
Williams,
d.

etallic Lava
), Office, 42,
st materials
, warehouse
ls and milk-
d terraces.
Bridge Co.

",
CESS,
et,
lane, E.C.

., LTD.,
ND.
BUILDERS,
ERS.

H FLOORING
ngs, etc.
REET, S.W.

STONE . .
, MERCHANTS,
ENSINGTON.
al Stone
ME TRADE
and
PORT
E.

p Courses.
ther Floors.

y

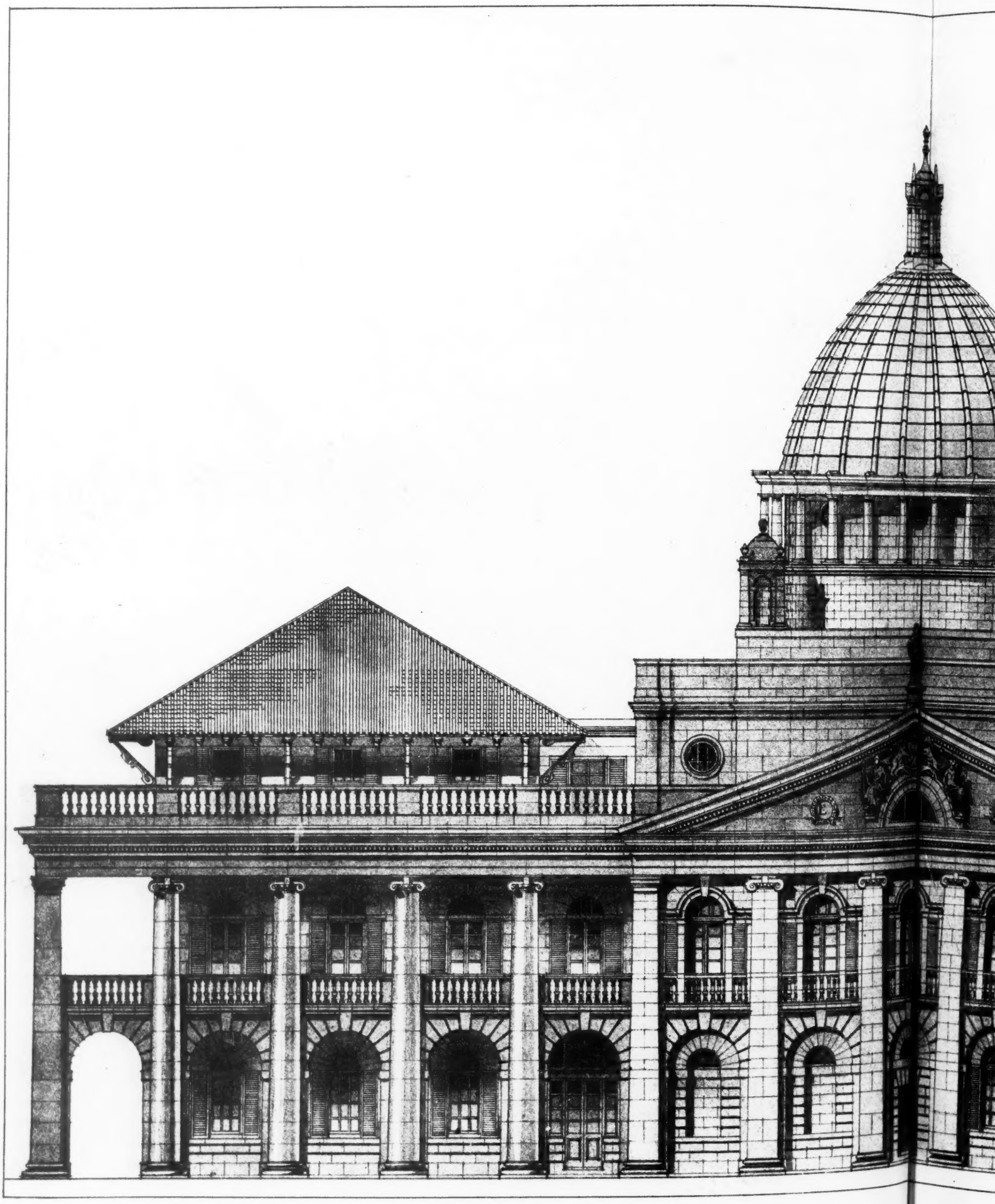
te Co.

or London, &c.
formation
pany.
Y HILL,
.

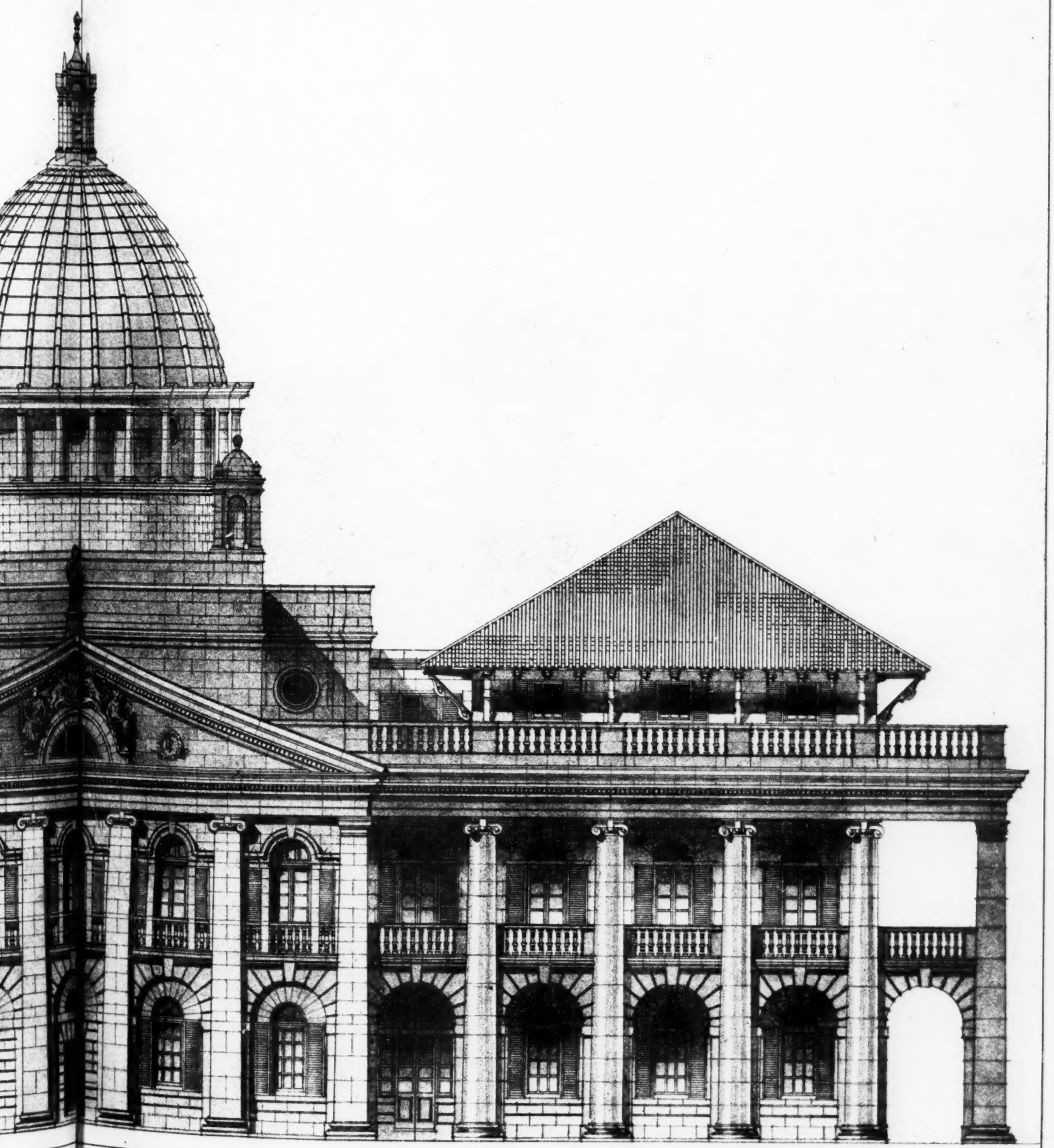
ng

.
ng.

phone:
(3 lines).
N.W.



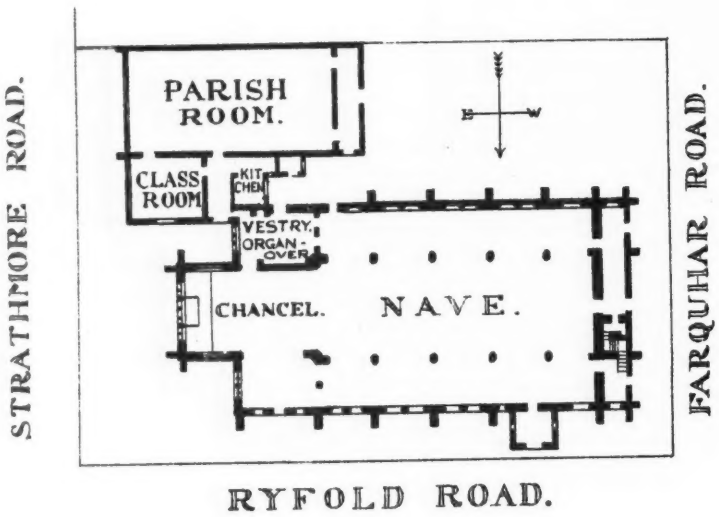
NEW LAW COURTS, HONG KONG.—Sir Aston Webb, R.A., & Mr. E. I
ELEVATION.

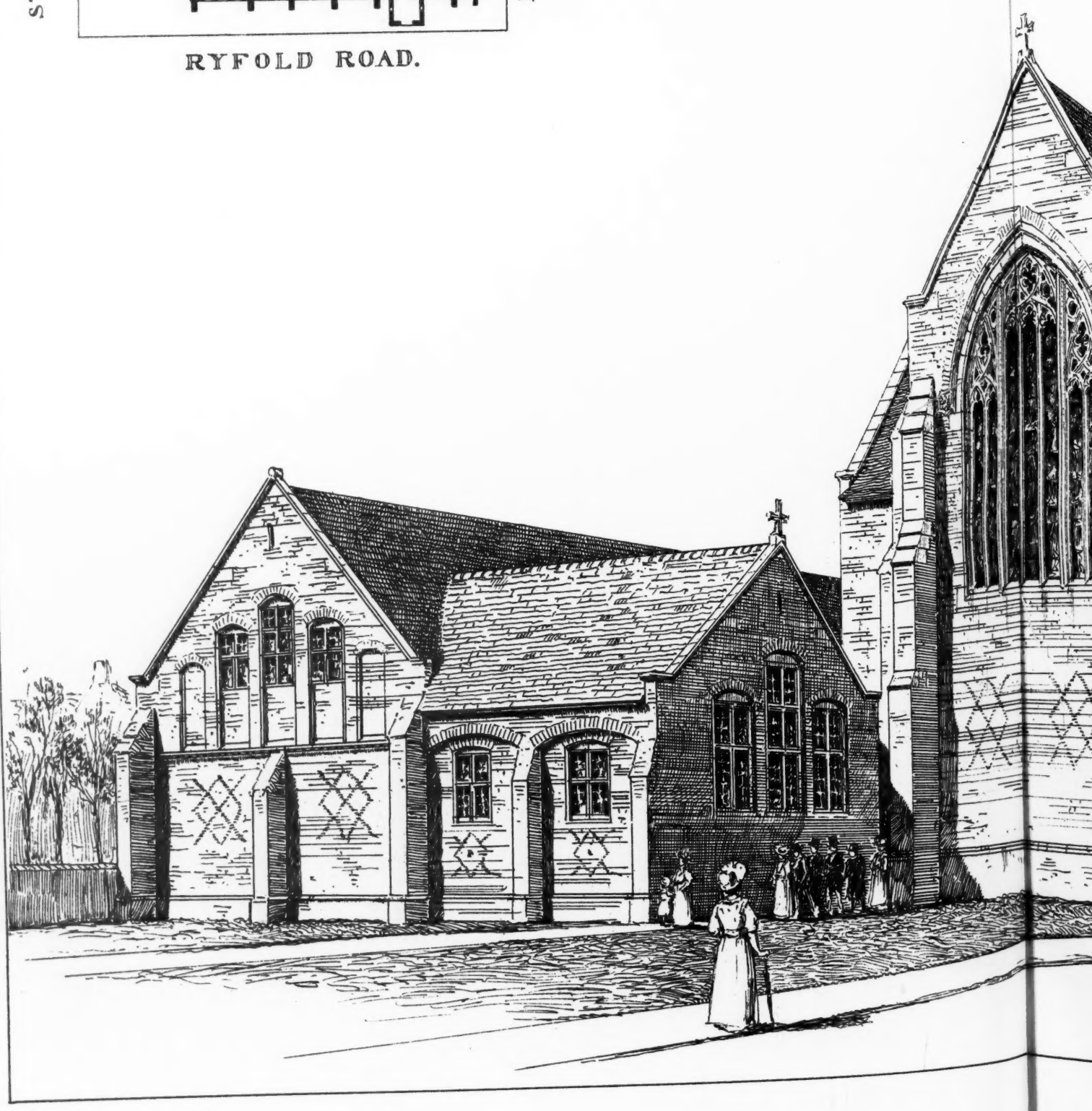


INK-PHOTO. SPRAGUE & Co. Ltd. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

R ASTON WEBB, R.A., & MR. E. INGRESS BELL, F.R.I.B.A., JOINT ARCHITECTS.

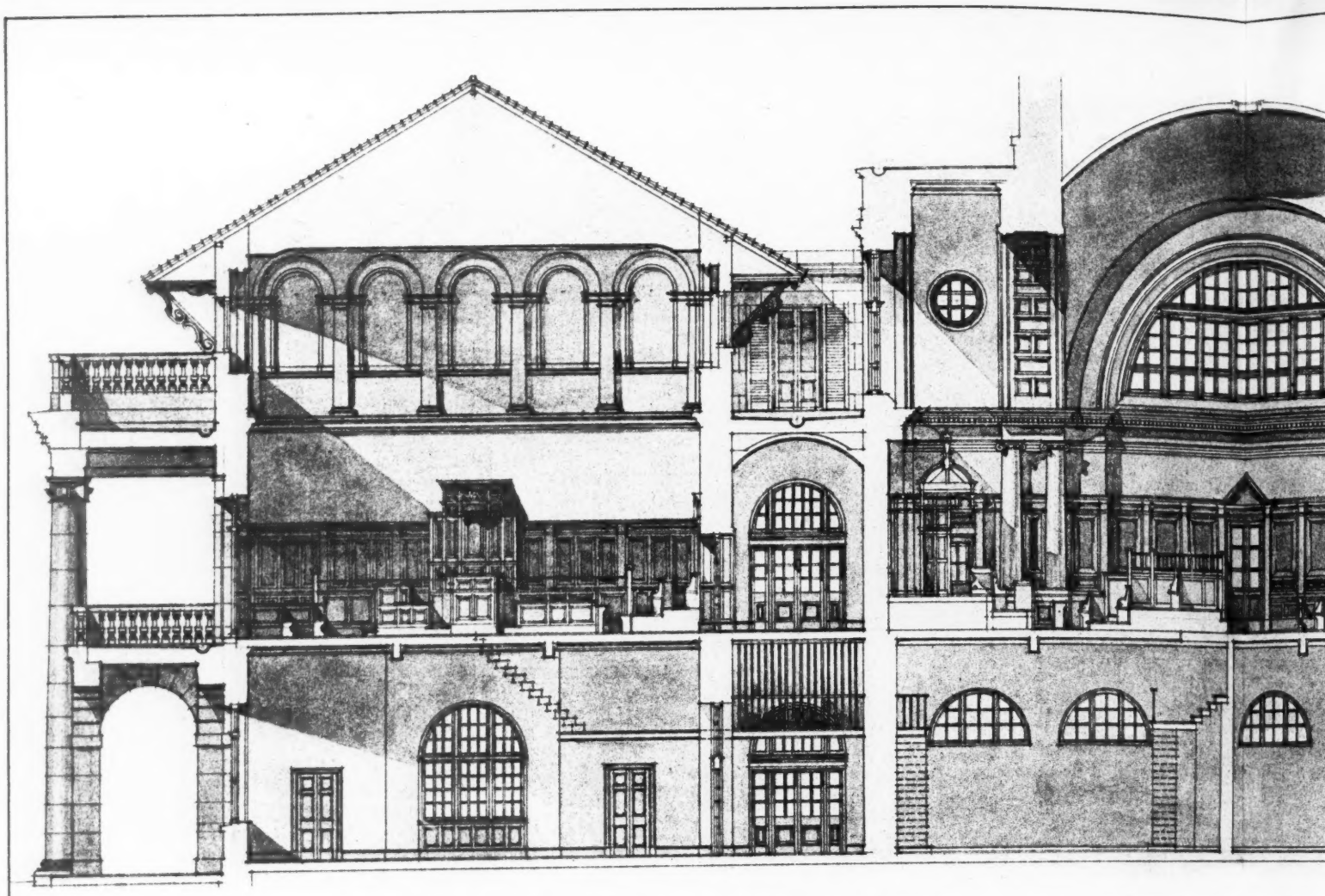
ELEVATION.

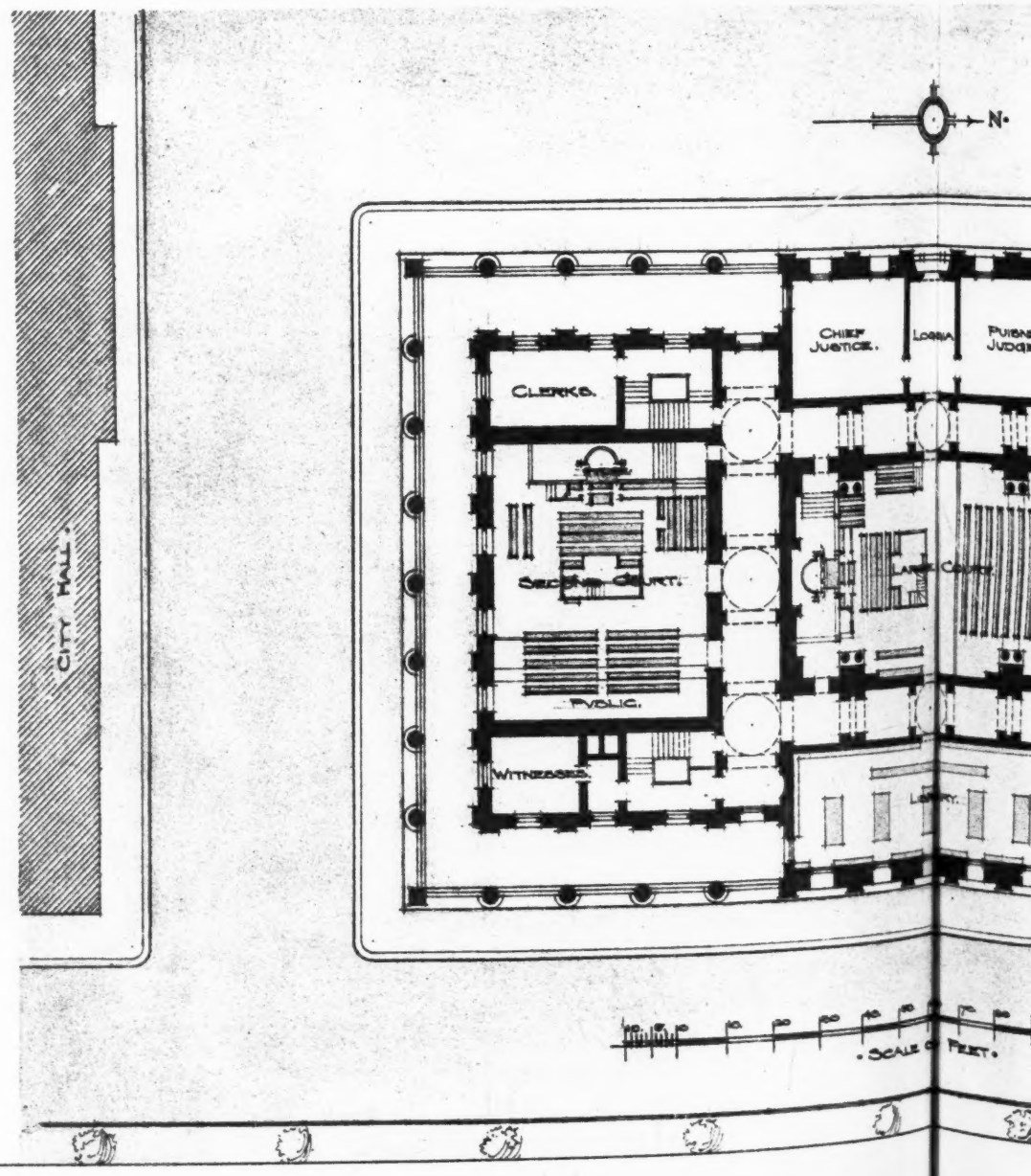

PARISH ROOM.
CLASS ROOM
KIT CHEN
VESTRY.
ORGAN-OVER
CHANCEL.
NAVE.
STRATHMORE ROAD.
FARQUHAR ROAD.
RYFOLD ROAD.



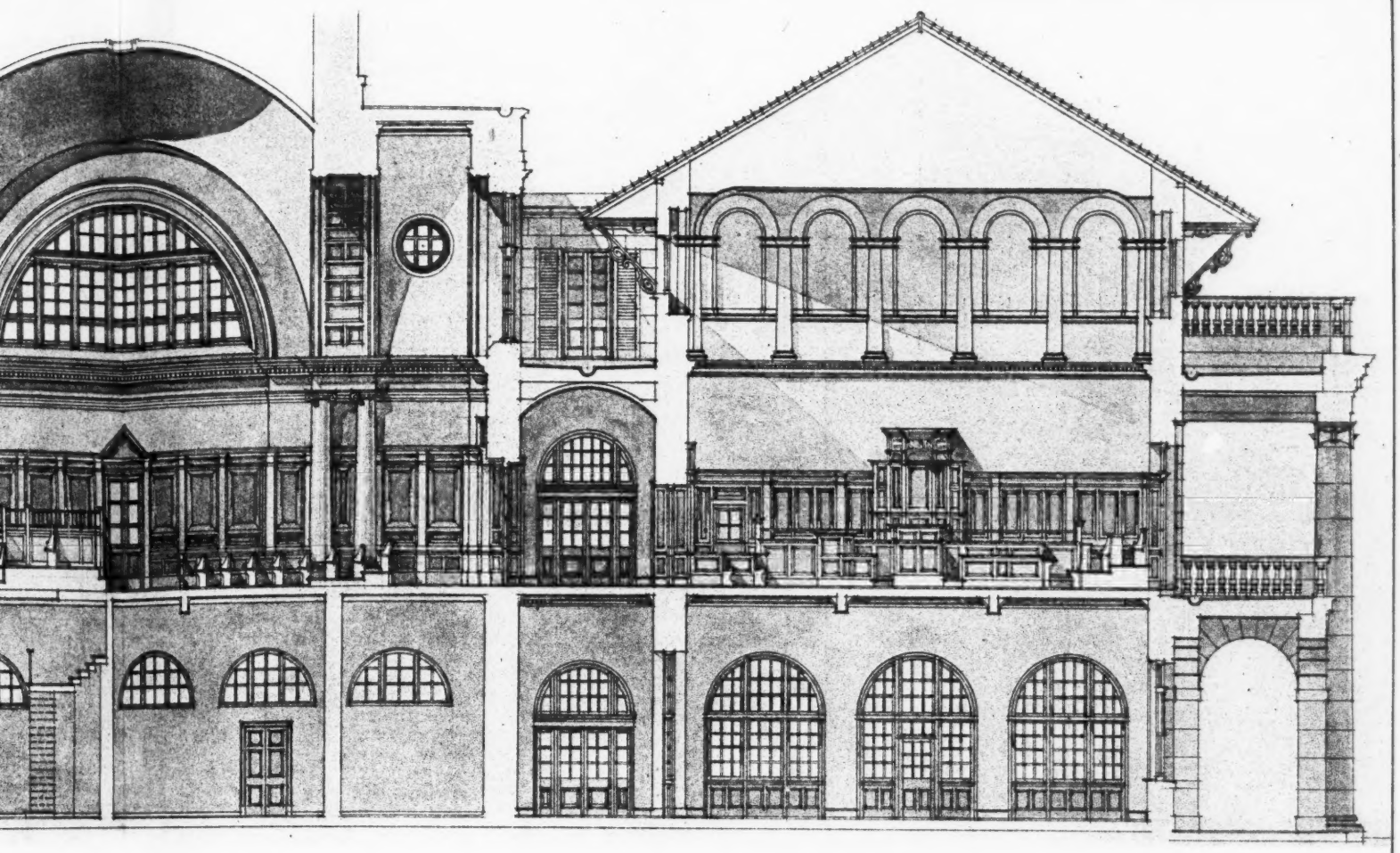
Thos. G. Jackson - R.A. -
Mar. 31. 1908 -

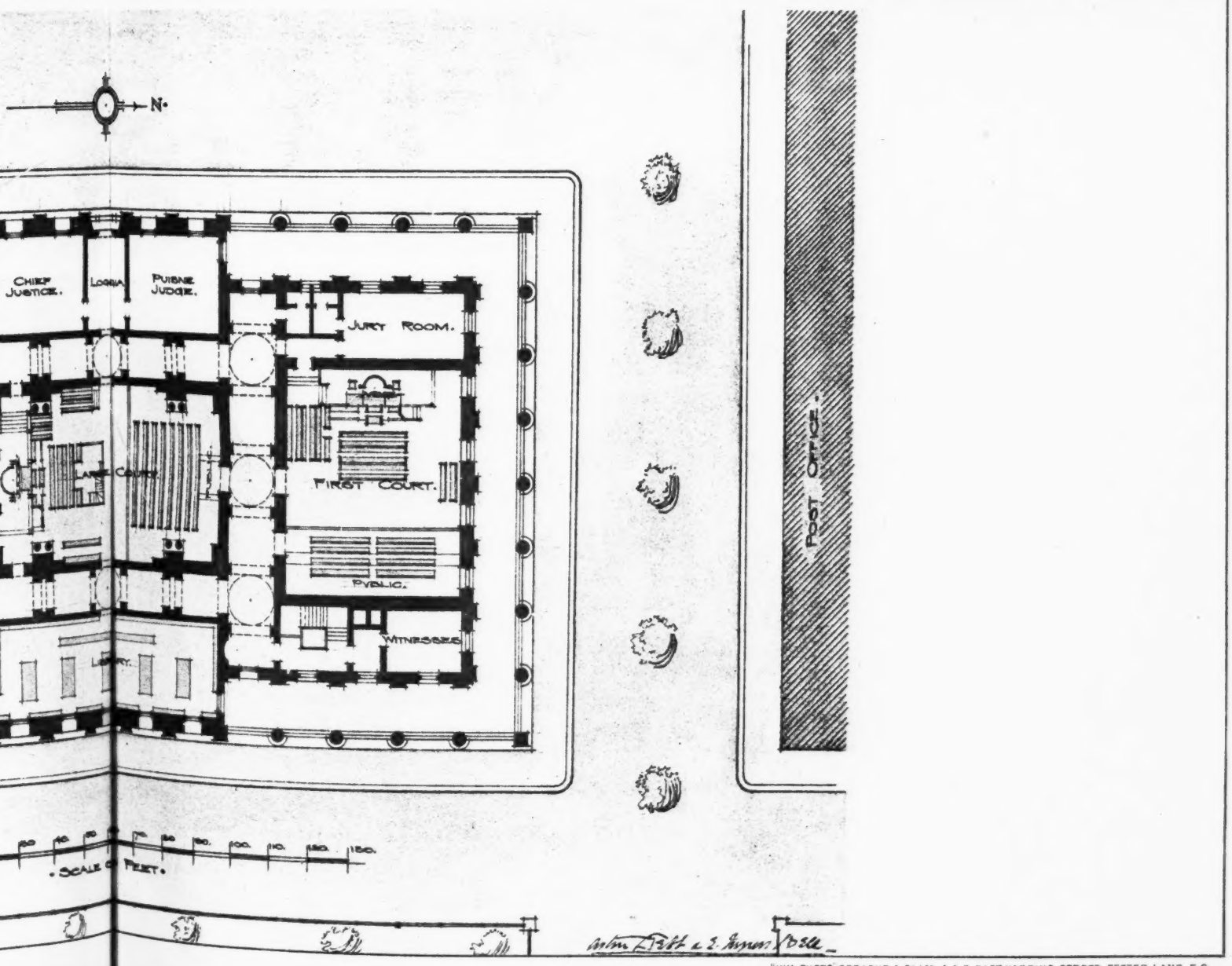
PHOTO-LITHO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.





NEW LAW COURTS, HONG KONG.—SIR ASTON WEBB, R.A., & MR.
SECTION AND PLAN.





"INK-PHOTO. SPRAGUE & Co Ltd 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

-SIR ASTON WEBB, R.A., & MR. E. INGRESS BELL, F.R.I.B.A., JOINT ARCHITECTS.

SECTION AND PLAN.

Albert Lévy, Photographer, Asnières.

RENAISSANCE AND MODERN CHURCHES OF PARIS.—

RN CHURCH OF PARIS.—V. ST. VINCENT DE PAUL.

Sprague & Co., Ltd., Printers, 4 & 5 East Harding St., E.C.